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FLORA

OF THE

SOUTHERN UNITED STATES.

FLORA

OF THE

SOUTHERN UNITED STATES:

CONTAINING AN ABRIDGED DESCRIPTION OF THE

FLOWERING PLANTS AND FERNS

OF

TENNESSEE, NORTH AND SOUTH CAROLINA, GEORGIA,
ALABAMA, MISSISSIPPI, AND FLORIDA:

ARRANGED ACCORDING TO THE NATURAL SYSTEM.

BY

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THIRD EDITION.

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W. P. 4

PREFACE.

THIS work, originally designed to be the joint production of the late Rev. Dr. CURTIS and myself, ultimately fell to my sole charge. With limited equipment for such an undertaking, and fully occupied in the discharge of the active duties of my profession, in moments of leisure during three or four years the task was completed, given to the press, and favorably received by my contemporaries both at home and abroad.

In this edition, in order to incorporate the contents of the two supplements of the last edition, and additional matter since accumulated, and still to retain the volume within handy limits, it became necessary to rewrite or abbreviate portions of the former editions.

The nomenclature of the first edition, which was that in general use at the commencement of my botanical career, three quarters of a century ago, is mainly retained.

In a region so vast, with surface and climate so varied as that embraced within the limits assigned to this work, there still must remain much to reward the labors of future explorers, and many new species have been proposed by recent collectors as occurring within my limits. These, which are unknown to me, when duly confirmed, together with corrections of such errors as may be detected in the present volume, will have place in future issues.

APALACHICOLA, FLORIDA.

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CONTENTS.

PAGE
INTRODUCTION ix
SKETCH OF THE ELEMENTS OF BOTANY ix
GLOSSARY OF BOTANICAL TERMS xviii
ABBREVIATIONS OF THE NAMES OF AUTHORS . . . xxv
SIGNS USED IN THIS WORK xxvi
DIRECTIONS TO THE STUDENT xxvii
ARTIFICIAL ANALYSIS OF THE NATURAL ORDERS . . xxix
FLORA.—PHÆNOGAMOUS OR FLOWERING PLANTS . . . 1
CRYPTOGAMOUS OR FLOWERLESS PLANTS . . 621
INDEX 645

INTRODUCTION.

I. SKETCH OF THE ELEMENTS OF BOTANY.

1. Vegetable Tissue.

1. **Plants** are primarily composed of minute membranous vesicles or cells, which are endowed with the power of reproduction, and through which, although closed and destitute of visible pores or openings, the juices of the plant are readily transmitted.

2. Variously modified, these cells form the *Elementary Tissues;* viz. *Cellular Tissue* or *Parenchyma, Woody Tissue* or *Woody Fibre,* and *Vascular Tissue* or *Vessels* and *Ducts.*

3. *Cellular Tissue,* which exists in all plants, and of which those of the lower orders are wholly composed, consists of cells aggregated together, and cohering by their contiguous surfaces.

4. *Woody Tissue* is composed of slender and elongated cells, with firm and thickish walls, collected in threads or bundles.

5. *Vascular Tissue* is made up of larger cells, either in the form of continuous tubes, or forming such by the union of their extremities. In some of these, the walls are marked with dots, lines, or bands; while in others they are lined with spirally coiled fibres which are capable of being unrolled. The latter are called *Spiral Vessels,* and exist only in plants which bear proper flowers.

6. Of these tissues are formed the *Organs* of plants; viz. *Organs of Vegetation,* consisting of the *Root, Stem,* and *Leaves,* and *Organs of Reproduction,* consisting of the *Flower* and *Fruit.*

2. The Root.

7. The *Root,* or *Descending Axis,* is that part of the plant which grows downward, commonly penetrating the soil, from the moisture of which it imbibes nourishment. It branches indefinitely and without order, but bears no other appendages. Its ultimate branches are called *Rootlets.*

8. Roots which descend immediately from the embryo are termed *Primary Roots.* They are called *Tap-Roots,* when they consist of one thick and fleshy piece; *fascicled* or *clustered,* when of several fleshy branches springing from a common centre; *tuberous* when the branches become greatly enlarged and filled with starchy matter; and *fibrous,* when all the parts are slender and thread-like.

9. But roots under favorable circumstances are developed from other parts of the plant. These are called *Secondary Roots.*

10. *Aerial Roots* are those which spring from the stem or branches above ground. In some, as in many Endogenous Plants, they proceed from the lower joints of the stem; in others, as the Mangroves and Fig-trees of South Florida, they descend from the branches, and at length, penetrating the soil, form new stems in all respects similar to that of the parent tree. The tendril-like roots of some climbing stems are also of this class.

11. *Epiphytes* or *Air-Plants,* of which the Tillandsia and Epidendrum are examples, are those which are borne on the trunks or branches of trees, but draw their nourishment from the air.

12. *Parasites,* like Air-Plants, grow on other plants; but their roots, penetrating the substance of the supporting plant, feed upon its juices. Some, as the Mistletoe and Dodder, fix themselves upon the trunk or branches; others, like the Beech-drop, upon the root.

3. The Stem.

13. The *Stem,* or *Ascending Axis,* is that part of the plant which grows upward into the air and light, bearing leaves and flowers. It exists, under various modifications, in all flowering plants; but in those which are said to be *stemless* or *acaulescent,* it is very short, or concealed in the ground.

14. It consists of a succession of leaf-bearing points, or *Nodes,* separated by naked joints, or *Internodes.* The growing points, which are protected by reduced leaves in the form of scales, are called *Buds.* These are *terminal,* when they terminate the axis; *axillary,* when they spring from the axil of the leaves; that is, from the point where the upper surface of the leaf joins the stem; and *adventitious,* when they are developed from any other part.

15. Simple stems grow by the development of the terminal bud alone; branching stems expand indefinitely from the axillary buds also. The ultimate divisions of the branches are called *branchlets.*

16. The jointed stem of Grasses and similar plants is a *Culm.*

17. The thick and simple stem of the Palmetto is a *Caudex.*

18. A *Rhizoma,* or *Rootstock,* is a perennial stem, commonly creeping on the ground, or beneath its surface, developing annually a bud at the apex, while the older portion decays.

19. A *Tuber* is a subterranean branch, excessively thickened by the deposition of starchy matter, and furnished with minute scales, having concealed buds (eyes) in their axils.

20. A *Corm* is a solid globular subterranean stem, filled with starchy matter, with a bud at the apex and roots below.

21. A *Bulb* is a short subterranean stem, made up of the thickened bases of leaves, in the form of persistent scales. It is *tunicated* or *coated,* when the scales are large and wrapped one within the other; and *scaly,* when these are small and imbricated. Small aerial bulbs, such as are borne in the axil of the leaves of the Tiger-Lily, and among the flowers of the Onion, are called *Bulblets*

22. A *Stolon* is a branch which bends to the earth, strikes root, and forms a new plant.

23. A *Runner* is a thread-like prostrate branch, producing roots and a tuft of leaves at its extremity.

24. *Spines*, or *Thorns*, are imperfectly developed, leafless branches, with hard tips.

25. *Tendrils* are the thread-like spirally coiled branches of weak and slender plants, by means of which they attach themselves to other and stronger objects for support. Leaf-stalks and parts of the inflorescence are occasionally converted into tendrils.

26. Plants which die down to the ground at the close of the season, or after maturing seed, are called *Herbs*, or *Herbaceous Plants*. Those with woody stems, lasting from year to year, when of humble size, are called *Shrubs*, and when reaching an elevation of twenty feet or more, *Trees*.

4. Internal Structure of Stems.

27. The stems of Phænogamous Plants are composed of cellular tissue, woody tissue, and vessels; and upon the arrangement of the latter are founded the two divisions of *Exogenous* and *Endogenous Plants*.

28. Exogenous stems consist of a central column, called the *Pith;* an external covering, called the *Bark;* and a middle portion, called the *Wood*.

29. Their *Pith* is a mass of cellular tissue, enclosed in a thin sheath of spiral vessels, termed the *Medullary Sheath*.

30. Their Wood is composed of one or more layers of woody and vascular tissue, traversed by thin plates of cellular tissue, called the *medullary rays*, and annually increased, in all perennial stems, by the addition of a new layer to the outside of that of the previous year. The new wood is called the *Alburnum*, or *Sap-wood*, and the older and harder portion, the *Duramen*, or *Heart-wood*.

31. The Bark, like the wood, is made up of layers. The inner bark, or *Liber*, is composed chiefly of woody fibre. Between it and the wood, in the growing season, is secreted a thin mucilage, called the *Cambium*, in which the new layers of wood and bark are developed. Surrounding the inner bark is the *Green bark*, consisting of cellular tissue filled with Chlorophyll, or the green matter of vegetables. Covering the whole is a thin membrane of cellular tissue, called the *Epidermis*, or *Cuticle*.

32. Endogenous stems exhibit no distinction of pith, wood, and bark; but are composed of threads or bundles of woody tissue, irregularly embedded in cellular tissue. They increase in diameter by the formation of new bundles, which are chiefly directed to the centre of the stem.

5. The Leaves.

33. Leaves are expanded appendages of the stem, developed from axillary and terminal buds. They consist of loose cellular tissue, supported by a network of woody and vascular tissue, called *veins* or *ribs*, and protected by the epidermis. In them the fluids received from the root, and what they imbibe from the air, through minute openings in the epidermis, called *stomata*, are converted into the proper food of the plant.

34. In the bud, they are folded, plaited, or coiled in various ways. This is termed their *Vernation*.

35. A complete leaf comprises the *Blade*, the *Stalk*, and a pair of *Stipules;* but these three parts are not always present in one leaf.

36. The Blade, Limb, or Lamina, is the expanded part, and presents a great variety of forms. It is *simple*, when it consists of a single piece, however cut or divided; and *compound*, when of two or more distinct pieces (*leaflets*), which separate by a joint.

37. The Stalk, or Petiole, connects the blade with the stem. When it is wanting, the leaf is said to be *sessile*. The stalk of a leaflet is called a *Petiolule*.

38. The Stipules are appendages of various forms, placed one on each side at the base of the petiole. They are separate, or else united with the petiole, or with each other, when they occasionally form a sheath (*Ochrea*) around the stem above. The stipules of a leaflet are called *Stipels*.

39. The manner in which the veins are distributed through the leaf is called *Venation*.

40. There are two modes of venation; viz. *parallel-veined*, or *nerved*, when several simple veins, or ribs, run parallel from the base of the blade to its apex; and *reticulated*, or *netted-veined*, when the veins divide into numerous primary and secondary branches (*veinlets*), which again unite to form a kind of network.

41. The latter mode embraces both the *pinnately veined*, or *feather-veined* leaf, where the petiole is continued through the middle of the blade, giving off at intervals lateral veins; and the *palmately veined* or *ribbed* leaf, when it divides at the apex into three or more strong branches.

42. The manner in which leaves are divided corresponds with that of their venation.

43. A simple pinnately veined leaf becomes *pinnatifid*, when the incisions (*sinuses*) extend about half-way to the *midrib*, or continuation of the petiole; and *pinnately divided*, when they extend down to the midrib. A compound pinnately veined leaf is, of course, *pinnate*, with the separate leaflets arranged on each side of the common petiole. When this is terminated by a leaflet, the leaf is said to be *odd-pinnate*, or *unequally pinnate*, and when it is wanting, *abruptly pinnate*.

44. So, also, the palmately veined leaf becomes *palmately* cleft or divided, when the incisions are directed toward the base of the blade. When the divisions consist of separate leaflets, it becomes *palmately* compound.

45. Floral leaves, or those from the axils of which the flowers are developed, are called *Bracts;* and those which are borne on the flower-stalk, *Bractlets*.

6. The Flower.

46. A Flower consists of those parts, or organs, which are concerned in the production of seed. Like the leaf, of which its parts are a modification, it is developed from an axillary or terminal bud.

47. The manner in which the flowers are arranged on the stem or branches is termed the *Inflorescence*.

48. There are two modes of inflorescence; viz. the *indefinite*, or *centripetal*, where the flowers all arise from axillary buds, the lowest or outermost expanding first, while the axis elongates indefinitely from the terminal bud; and the *definite*, or *centrifugal*, where the flowers arise from the terminal bud, first, of the main axis, and successively from that of the branches.

49. When the flowers arise from the axil of the ordinary leaves of the stem, they are said to be *axillary;* but oftener, they are disposed in a more or less obvious cluster, each arising from the axil of a greatly reduced leaf, or *Bract.*

50. The stalk of a solitary flower, or of a cluster of flowers, is termed the *Peduncle;* or, when it proceeds from the root, a *Scape;* and that of each individual of a cluster is called a *Pedicel.* The main axis of a cluster, or that portion of the common peduncle which bears the flowers, is called the *Rachis.*

51. The indefinite inflorescence includes the *Spike, Ament, Spadix, Raceme Corymb, Umbel, Head,* and *Panicle;* the definite, the *Cyme* and its modifications.

52. The Spike consists of a more or less elongated rachis, with the flowers sessile, or nearly so, in the axils of the bracts.

53. The Ament, or Catkin, is the scaly deciduous spike of the Pine and Willow.

54. The Spadix is a spike with the flowers borne on a thick and fleshy rachis. It is naked, as in the Golden-club, or enclosed in a hood, called the *Spathe,* as in the Indian Turnip.

55 The Raceme presents the elongated rachis of the spike, but the flowers are raised on pedicels.

56. The Corymb is a short raceme, with the lower pedicels elongated, so as to bring their flowers to the same level as the upper ones.

57 The Umbel is a modification of the raceme, but with the rachis so much contracted, that the pedicels (rays) apparently spring from a common centre. When the umbel is compound, the partial umbels are termed *Umbellets.*

58. A Head is an umbel with sessile flowers. The crowded bracts of this and the preceding are collectively termed the *Involucre,* and those of the umbellets, the *Involucel.*

59. When the pedicels of a raceme or corymb are transformed into branches, either simple or successively divided, the inflorescence becomes a *Panicle.*

60. When the further growth of the axis is arrested by a single terminal flower, and from the axils below branches are developed, each terminated by a flower, and bearing branches in the same manner, the inflorescence is said to be *cymose* or *centrifugal.* But it presents several peculiar forms, occasioned either by the imperfect development, or by the entire suppression of some of its parts. Some, as the true *Cyme,* are short and expanded; others are elongated, like the spike or raceme. In all, the flowers expand successively from the summit, downward, or from the centre, outward.

61. The Flower consists, commonly, of one or more whorls of leaves, called the *Floral Envelopes,* — of which the outer one is termed the *Calyx,* and the inner one the *Corolla,* — an inner whorl of thread-like organs, called the *Stamens,* and one or more central organs, called the *Pistils.* These are inserted on the apex of the axis, which here takes the name of *Torus,* or *Receptacle.*

62. The Floral Envelopes are sometimes wanting; but the stamens and pistils, being the fertilizing organs, are, in all perfect flowers, always present.

63. The Calyx is composed of leaves (*Sepals*), usually of a greenish color, which are distinct, or united by their margins. When the floral envelopes consist of a single whorl only, it is always a calyx.

64. The Corolla is usually of a thinner texture than the calyx, and variously colored. Its leaves (*Petals*), when of the same number as the sepals, always alternate with them. They are also often united by their contiguous margins, to form a *monopetalous* corolla.

65. When the calyx and corolla are so nearly alike as not to be readily distinguished, they are collectively termed the *Perianth.*

66. A flower is *complete* when all its parts are present; *incomplete,* when the floral envelopes, or a part of them, are wanting; *perfect,* when the stamens and pistils are borne in the same flower; *imperfect,* or *diclinous,* when they are borne in separate flowers; *regular,* when the sepals or petals are of uniform shape and size; and *irregular,* when they are unlike in shape or size.

67. Imperfect flowers are further distinguished into *monœcious,* when those furnished with stamens (*staminate* or *sterile flowers*) and those furnished with pistils (*pistillate* or *fertile flowers*) are borne on the same plant; *diœcious,* when they are borne on separate plants; and *polygamous,* when both perfect and imperfect flowers are borne on the same or different individuals.

68. The manner in which the parts of the floral envelopes are arranged with respect to each other in the bud is termed their *Æstivation.* They are *valvate,* when their contiguous margins meet, without overlapping; *induplicate,* when these project inwardly; *reduplicate,* when they project outwardly; *imbricated,* when the margins of one overlap the adjacent margins of the two next within; *convolute,* or *twisted,* when one edge of each piece covers the margin of the one next before it, and the other edge is covered by the margin of the one next after it; and *plaited,* when the parts are folded lengthwise.

7. The Stamens.

69. A Stamen consists of a sac, called the *Anther*, and, usually, a stalk, called the *Filament*, by which it is supported.

70. They are *hypogynous,* when they are inserted on the receptacle; *perigynous,* when on the calyx; *epigynous,* when on the ovary; *epipetalous,* when on the corolla; and *gynandrous,* when they are united with the style. They are, also, often combined with each other, either into one set (*monadelphous*), or into two, three, or more sets (*diadelphous, triadelphous,* &c.).

71. The Anther is composed, commonly, of two united cells, which open in various ways, and discharge a yellow, fertilizing powder, called the *Pollen.* The part which connects the cells is the *Connective.*

72. It is *erect*, or *innate*, when fixed by its base to the apex of the filament; *adnate,* when fixed to the filament by its whole length; *versatile,* when fixed by the middle to the apex of the filaments on which it turns as on a pivot; *introrse,* when it faces inwardly toward the pistils; and *extrorse,* when it faces outwardly toward the petals. Occasionally, they are united into a tube (*syngenesious*).

73. Between the stamens and the pistils is often a fleshy expansion, called the *Disk.*

8. The Pistils.

74. The Pistils occupy the centre of the flower. They are inserted, singly or in a whorl, on the receptacle; or, when this is elongated or enlarged, they cover its surface.

75. A Pistil consists of three parts, — the *Ovary*, the *Style*, and the *Stigma*.

76. The Ovary is the lower and hollow portion, containing the *Ovules*, or rudiments of seeds.

77. The Style is an extension of the ovary, commonly of its apex, which supports the stigma.

78. The Stigma is commonly the apex of the style, or, when this is wanting, of the ovary, denuded of the epidermis.

79. When the pistil is composed of a single piece, or *carpel*, it is *simple;* but, oftener, it is *compound*, consisting of two or more carpels, united by their margins, or by their sides, which then form partitions or *dissepiments*, that divide the pistil into as many cells as there are carpels.

80. The line next the axis, or which corresponds to the united margins of a folded leaf, is called the *Ventral Suture;* and that which corresponds to the midrib, the *Dorsal Suture.*

81. The Ventral Suture bears the ovules; and the line of their attachment is called the *Placenta.* This is *central* or *axile*, when it occupies the centre of the pistil, and *parietal*, when it is borne on its walls.

82. The Ovule is connected with the placenta by a cord, called the *Funiculus.* It consists of a central body, called the *Nucleus*, enclosed in two sacs, each with an opening at the apex, called the *Foramen.* The outer sac is termed the *Primine*, and the inner one the *Secundine.* The point where these parts unite is called the *Chalaza.*

83. The Ovule is *orthotropous* when the chalaza is next the placenta, and the apex at the opposite extremity; *campylotropous*, when it curves on itself, so as to bring the apex near the chalaza; *anatropous*, when it is inverted on its cord, to which it adheres; the true apex pointing to the placenta, while the chalaza, or true base, points in an opposite direction; and *amphitropous*, when it is half inverted on its cord, its axis running parallel with the placenta. The adhering portion of the cord in the last two cases is termed the *Raphe.*

9. The Fruit.

84. The Fruit is the ovary, with its contents, brought to maturity. But during this process it sometimes undergoes important changes, either by the obliteration or abortion of some of its cells, partitions, or ovules, or by the formation of false partitions, or by various changes effected in its walls, or in the parts which surround them.

85. In some, the walls, or *Pericarp*, remain closed; in others, they open, or are *dehiscent* in various ways, oftener splitting regularly into separate pieces, called *Valves.*

86. Many terms are employed to designate the different kinds of fruit, but only the following are in general use.

87. A *Follicle* is a simple fruit, opening along the ventral suture only; as the fruit of the Milkweed.

88. A *Legume* is a simple fruit opening at both sutures; as in the Pulse Family. When it is divided across into closed joints, it is a *Loment.*

89. A *Capsule* is a dry compound fruit, opening in various ways. When it opens at the dorsal sutures, or into the cells, the dehiscence is said to be *loculicidal*.

and *septicidal,* when it opens at the ventral suture, or through the partitions. When it opens transversely, the upper portion falling off entire, like a lid, the dehiscence is *circumscissile.*

90. A *Silique* is a slender two-valved capsule, with two parietal placentæ connected by a persistent false partition. A short and broad silique is a *Silicle.* These are peculiar to the Mustard Family.

91. A *Pepo* is the fleshy indehiscent fruit of the Gourd Family, with the seeds often embedded in the pulpy placentæ

92. A *Pome* is the indehiscent fruit of the Apple or Quince tribe, where the cells are enclosed in the enlarged and fleshy tube of the calyx.

93. A *Berry* is an indehiscent fruit, with the seeds embedded in soft pulp.

94. A *Drupe* consists of one or more hard or bony cells, called the *Putamen,* covered with a fleshy or pulpy coat, called the *Sarcocarp;* as the Peach, Holly, &c.

95. An *Achenium* is a small, dry, one-seeded, indehiscent fruit, the walls of which do not adhere to the enclosed seed. When these are closely united, it becomes a *Caryopsis;* or when the walls are thin and bladder-like, and open irregularly, a *Utricle.*

96. A *Nut* is a dry, indehiscent fruit, with hard or bony walls; as the Acorn and Hickory-nut.

97. A *Samara* is a dry, indehiscent fruit, with its walls expanded into a wing; as that of the Maple and Elm.

98. The collective fruit of the Pine is called a *Cone* or *Strobile.*

10. The Seed.

99. The Seed is the matured ovule, and contains the *Embryo,* or the rudiment of a future plant. The outer coat, or *Integument,* is called the *Testa.* It varies greatly in texture, and is occasionally furnished with hairs, which either cover the entire seed, or form a tuft (*Coma*) at one or both extremities.

100. The terms employed in describing the ovule are chiefly applicable to the seed. The foramen of the ovule, which is closed in the seed, becomes the *Micropyle,* and is always opposite the radicle of the embryo. The scar left on the seed by the separation of the cord is the *Hilum.* It is sometimes enveloped in a false covering, originating, during its growth, from the cord or from the placenta. This is called the *Aril.*

101. The Testa includes either the embryo alone, or an additional nutritive substance, called the *Albumen.*

102. The *Embryo* consists of the *Radicle,* the *Plumule,* and the *Cotyledons.*

103. The Radicle is the first joint of the stem. In germination, it elongates at one end to form the root, and at the other, from a minute bud (*Plumule*), to form the stem. It is *inferior* when it points to the base of the pericarp, and *superior* when it points to its summit.

104. The Cotyledons are the seed-leaves. The embryo of the Exogenous Plants bears two of these, placed opposite (rarely three or more in a whorl), while that of Endogenous Plants bears only one. Hence the former are called *dicotyledonous,* and the latter *monocotyledonous.*

105. When the embryo is exposed to the combined influence of air, heat, and moisture, it develops into a growing plant. This is termed *Germination.*

106. The preceding considerations refer solely to Phænogamous Plants, or those which bear flowers, consisting of stamens and pistils, and produce seeds, which contain an embryo, or a rudiment of a future plant.

107. But there are plants of a lower grade, which do not bear flowers furnished with ordinary stamens and pistils, nor seeds containing an embryo, but in place of seeds they produce minute powdery bodies, called Spores. These are termed

11. Cryptogamous or Flowerless Plants.

108. The stems of the higher orders of Cryptogamous Plants — and these only are embraced in this work — exhibit nearly the same anatomical structure as those of Phænogamous Plants. But they grow only from the apex, without any perceptible increase of diameter, and therefore are termed *Acrogens* or *Point-growers.*

109. The different orders presenting no common type, the habit, the mode of inflorescence, and the process of fertilization, so far as it is known, being different in all of them, the characteristics of each are more conveniently explained in the body of the work, and need not be enumerated here.

12. Classification.

110. Classification consists in the arranging of plants possessing like structure, habits, &c., into groups, designating them by proper names, and defining them by appropriate characters.

111. An assemblage of individuals which are so essentially alike as to indicate their descent from a common parent, and which preserve their characteristics when propagated from seed, is termed a *Species.* But circumstances connected with the growth of an individual may produce some deviation from its ordinary state, and it then becomes a *Variety.*

112. When the pistil of one species is fertilized by the pollen of another allied species, the result is a *Hybrid.*

113. An assemblage of species agreeing with one another in structure and appearance constitutes a *Genus.* In the same manner, although with fewer points of agreement, genera are collected into *Orders,* or *Families,* and these, in turn, into *Classes.*

114. But each of these may include members that agree in some important points, which are not common to the others. Of such are formed the intermediate divisions of *Subgenera*, *Suborders*, and *Subclasses.*

115. There are two modes or systems of classification; the Artificial System of Linnæus, and the Natural System of Jussieu.

116. In the Artificial System, the Classes and Orders are founded on the number, position, and connection of the stamens and pistils, regardless of any other relationship In the Natural System, every part of the plant is taken into consideration ; and the Orders embrace those genera which agree with each other in the greatest number of important particulars. The latter system is now in almost universal use, and is the one adopted in this work.

II. GLOSSARY OF BOTANICAL TERMS.

⁂ The numbers annexed to the names, or their definition, refer to the paragraphs of the preceding Sketch ; but those preceded by "Flora, p." refer to the pages of the Flora.

Abortive: not fully developed.
Abruptly pinnate, 43.
Accumbent: Flora, p. 24.
Achenium, 95.
Achlamydeous: without floral envelopes.
Acrogens: Flora, p. 585.
Acuminate: tapering into a slender point.
Acute: pointed.
Adherent: growing fast to another body.
Adnate: same as Adherent.
Adnate Anthers, 72.
Aerial Roots, 10.
Æstivation, 68.
Air-Plants, 11.
Aggregate: crowded together.
Albumen, 101.
Alburnum, 30.
Alternate: scattered; one after another.
Alveolate: deeply pitted.
Ament, 53.
Amentaceous: bearing aments.
Amphitropous, 83.
Anatropous, 83.
Androgynous: containing both staminate and pistillate flowers.
Angiospermæ: Flora, p. 1.
Annual: lasting only one year.
Annular: disposed in, or forming, a ring or circle.
Anterior: applied to that part of an axillary flower which is farthest removed from the main axis.
Anther, 71.
Apetalous: without petals.
Apiculate: tipped with a short abrupt point.
Appendage: something added to a part.
Appressed: lying near to; pressed against.
Aquatic: growing in water.
Arborescent: tree-like.
Areolation: spaces between the leaf-veins.
Aril, 100.
Arilled: covered with an aril.
Armed: furnished with thorns, prickles, &c.
Articulated: divided into joints; connected by a joint.
Ascending: ⎫ curving outward and upward.
Assurgent: ⎭
Attenuated: gradually narrowed.
Auriculate: eared; bearing small lateral lobes.
Awl-shaped: narrow and sharp-pointed.
Awn: a rigid bristle-like appendage.
Awned: bearing an awn.
Axil: the point where the upper surface of the leaf joins the stem.
Axillary: borne in the axil.
Axis: the central line of a body; the part around which others grow.

Baccate: berry-like; juicy.
Barbed: bearing rigid points which are directed backward.
Bark, 31.
Basal: belonging to the base.
Beaked: ending in a stout point.
Bearded: bearing tufts or lines of hairs.
Bell-shaped: expanding from a short and rounded base, into a spreading border.
Berry, 93.
Bidentate: two-toothed.
Biennial: lasting two years.
Bifid: two-cleft.
Bifoliolate: bearing two leaflets.
Biglandular: bearing two glands.
Bilabiate: two-lipped.
Bipinnate: twice pinnate.
Biternate: twice ternate.
Bladders: small sacs filled with air.
Blade: the expanded portion of a leaf, &c.
Boat-shaped: see Carinate.
Brachiate: with pairs of opposite branches spreading at right angles.
Bract, 45.
Bracted: furnished with bracts.
Bractlet, 45.
Bristle: a rigid hair.
Bristly: beset with, or like, bristles.
Brush-shaped: divided at the apex into numerous hairs or filaments.
Bud, 14.
Bulb, 21.
Bulbous: shaped like a bulb.
Bulblet, 21.

Caducous: falling away early.
Cæspitose: growing in a tuft.
Callous: thickened.
Calyx, 63.
Cambium, 31.
Campanulate: see Bell-shaped.
Campylotropous, 83.
Capillary: hair-like.
Capsule, 89.
Capsular: relating to, or with the characters of a capsule.
Carinate: keeled; bearing on the back a sharp longitudinal ridge.
Cariopsis, 95.
Carpel: a single pistil, or one of the parts of a compound pistil.
Carpellary: pertaining to a carpel.
Carpophore: Flora, p. 157.
Cartilaginous: hard and tough.
Caruncle: an appendage of the hilum.
Caudate: tailed.
Caudex, 17.
Caulescent: furnished with a stem.
Cauline: pertaining to the stem.
Cell: one of the cavities of the fruit or of the anther, &c.
Celled: divided into cells.
Cellular Tissue, 3.
Centrifugal Inflorescence, 48.
Centripetal Inflorescence, 48.
Chaff: thin scales or bracts.
Chaffy: furnished with chaff, or of the texture of chaff.
Chalaza, 82.
Channelled: with a deep longitudinal furrow.
Character: a phrase employed to distinguish a genus, &c. from all others.
Chartaceous: of the texture of paper.
Chlorophyll: the green matter of leaves, &c.
Ciliate: fringed with a row of hairs.
Circinate: rolled inward at the apex.
Circumscissile, 89.
Cirrhose: bearing tendrils; tendril-like.
Clasping: enclosing by its base, as a leaf the stem.
Clavate: club-shaped.
Claw: the stalk of a petal.
Clawed: raised on a claw.
Climbing: clinging to other objects for support.
Club-shaped: terete and gradually thickened upward.
Clustered: crowded.
Coated Bulb, 21.
Cobwebby: bearing fine loose hairs.
Cochleate: coiled like a snail-shell.
Coherent: growing together.
Column: the axis of a compound pistil; the united stamens of the Mallow Family; the united stamens and pistil of the Orchis Family.
Commissure: Flora, p. 157.
Comose: bearing a coma, 99.
Compound: composed of similar simple parts, 36.
Compressed: flattened.
Cone: the scaly fruit of the Pine.
Confluent: running together.
Conglomerate: heaped together.
Conical: cone-shaped.
Connate: growing together at the base, as opposite leaves around the stem.
Connective, 71.
Connivent: brought near together.
Continuous: in one piece; not jointed.
Contorted: twisted; bent.
Contorted æstivation: see Convolute.
Contracted: narrowed; not spreading.
Convolute, 68.
Cordate: heart-shaped.
Coriaceous: of the texture of leather.
Corm, 20.
Corneous: hard like horn.
Corniculate: bearing a horn or spur.
Corolla, 64.
Corymb, 56.
Corymbose: branched like a corymb; arranged in corymbs.
Costate: ribbed.
Cotyledons, 104.
Creeping: prostrate, and rooting.
Crenate: having sharp notches on the edge separated by rounded teeth.
Crenulate: slightly crenate.
Crested: bearing an elevated ridge.
Crown: an appendage of the corolla at the base of the limb.
Crowned: bearing anything at the apex.
Cruciform: shaped like a cross.
Crustaceous: hard and brittle, like a shell.
Cryptogamous Plants, 107.
Cucullate: see Hooded.
Culm, 16.
Cuneate: wedge-shaped.
Cup-shaped: shaped like a bowl or cup.
Cuspidate: ending abruptly in a sharp point.
Cuticle, 31.
Cylindrical: round and of nearly equal thickness.
Cyme, 60.
Cymose: arranged in a cyme.

Decandrous: having ten stamens.
Deciduous: falling off at, or before, the close of the season.
Declining: leaning to one side.
Decompound: several times divided.
Decumbent: prostrate, but ascending at the summit.
Decurrent: with the edges extending below the main point of attachment.
Definite: few; a number easily counted.
Definite Inflorescence, 48.
Deflexed: bent downward.
Dehiscence: the manner in which closed organs regularly open.
Dehiscent: opening regularly.
Deltoid: triangular.
Dentate: having sharp notches on the edge separated by coarse and spreading teeth.
Denticulate: slightly toothed.

Depressed: flattened horizontally.
Descending: directed downward.
Diadelphous: collected in two sets.
Diandrous: having two stamens.
Dichlamydeous: having both calyx and corolla.
Dichotomous: forked.
Diclinous, 66.
Dicotyledonous: having two cotyledons.
Didymous: twin.
Didynamous: having four stamens, with two of them longer than the others.
Diffuse: loosely spreading.
Digitate: when the apex of the petiole bears five or more leaflets.
Dimorphous: of two forms.
Diœcious, 67.
Discoid: Flora, p. 184.
Disk, 73. Also the central part of the head of composite flowers.
Dissected: divided into many lobes.
Distichous: two-ranked; placed on opposite sides of the axis.
Distinct: separate.
Divaricate: widely spreading.
Divided: parted nearly to the base.
Dorsal: pertaining to back or outside.
Dorsal Suture, 80.
Downy: bearing soft short hairs.
Drupe, 94.
Drupaceous: with the characters of a drupe.
Duramen, 30.
Dwarf: below the common size.

Eared: see Auriculate.
Echinate: beset with prickles.
Elliptical: in outline twice as long as wide, broadest in the middle, and rounded at each end.
Elongated: unusually long; extended.
Emarginate: notched at the apex.
Embryo, 102.
Emersed: raised out of water.
Endocarp: the inner layer of the pericarp.
Endogenous (stems), 32.
Enneandrous: having nine stamens.
Ensiform: sword-shaped.
Entire: with margins not toothed or divided.
Epigynous, 70.
Epiphytes, 11.
Equilateral: equal-sided.
Equitant (leaves): two-ranked, with their bases clasped one within the other, and their sides facing the horizon.
Erose: with the margin irregularly scalloped, as if gnawed.
Evergreen: lasting through the winter.
Exogenous, 28.
Exserted: protruding out of the surrounding parts.
Exstipulate: without stipules.
Extrorse Anthers, 72.

Falcate: scythe-shaped.
Family, 113.
Fan-shaped: folded or plaited like a fan.
Farinaceous: mealy.
Fascicle: a cluster.
Fascicled: collected in a cluster.
Fastigiate: rising to the same level; flat-topped.
Feather-veined, 41.
Female (flowers): bearing only pistils.
Ferruginous: of the color of iron-rust.
Fertile: bearing fruit.
Fibre, 4.
Fibrous Roots, 8.
Fiddle-shaped: oblong in outline, and contracted in the middle.
Filament, 69. Any thread-like part.
Filamentose: bearing or composed of threads.
Filiform: thread-like.
Fimbriate: with the margin cut into a fringe.
Fistulous: hollow.
Fleshy: soft and juicy.
Flexuous: zigzag; bent outward and inward.
Floating: resting on the surface of the water.
Floccose: bearing tufts of deciduous hairs.
Flora: a systematic description of the plants of a country.
Floral: belonging to the flowers.
Floret: one of the flowers of a cluster.
Flower, 61.
Flowering Plants, 106.
Flowerless Plants, 107.
Foliaceous: leaf-like.
Foliolate: bearing leaflets.
Follicle, 87.
Follicular: like a follicle.
Forked: divided into two branches.
Free: separate; disconnected.
Fringed: see Ciliate.
Frond: the leaf of a Fern.
Fructification: the fruiting state.
Fruit, 84.
Frutescent: shrubby.
Fugacious: continuing for a short time.
Fulvous: tawny.
Funiculus, 82.
Funnel-shaped: gradually dilated upward from a tubular base.
Furrowed: grooved lengthwise.
Fusiform: spindle-shaped; broadest in the middle, and tapering at each end.

Geminate: by pairs.
Geniculate: bent abruptly.
Genus, 113.
Germination, 105
Gibbous: puffed out.
Glabrous: free from roughness, or hairs.
Glands: small knobs or excrescences.
Glandular: bearing glands.
Glaucous: covered with a minute whitish powder.
Globose: }
Globular: } round; spherical.
Glomerate: collected in a close cluster.

Glumaceous: glume-like, or bearing glumes.
Glumes: the scale-like bracts, &c. of grasses and sedges.
Granular: covered with grains.
Gymnospermous Plants: Flora, p. 431.
Gynandrous, 70.

Habit: the general appearance of a plant.
Habitat: the native situation of a plant.
Hairs: hair-like appendages of the cuticle.
Hairy: furnished with hairs.
Hastate or Halberd-shaped: dilated at the base into two spreading lobes.
Heart-shaped: ovate, with a sinus at the base.
Heptandrous: having seven stamens.
Herb, 26.
Herbaceous, 26; of the color and texture of a leaf.
Herbarium: a collection of dried plants.
Hilum, 100.
Hirsute: beset with coarse hairs.
Hispid: beset with rigid hairs.
Hoary: grayish-white.
Homogeneous: uniform in substance.
Hooded: rolled inward or arched.
Horn: an appendage like a horn.
Horny: of the texture of horn.
Hyaline: thin and nearly transparent.
Hybrid, 112.
Hypogynous, 70.

Imbricated, 68.
Imperfect (flowers), 66.
Incised: cut into notches or lobes.
Included: enclosed; opposed to Exserted.
Incumbent: Flora, p. 24.
Incurved: bending inward.
Indefinite: numerous; not readily counted.
Indefinite Inflorescence, 48.
Indehiscent: not opening.
Indigenous: native to a country.
Induplicate: folded inward.
Indusium: Flora, p. 586.
Inferior: below, 103.
Inflated: puffed out, as if distended with air.
Inflexed: bent inward.
Inflorescence, 47.
Innate (anther), 72.
Inserted on: used in the sense of growing from a part
Insertion: the mode of attachment.
Internodes, 14.
Interrupted: not continuous; not jointed.
Interruptedly pinnate: with smaller leaflets between the larger ones.
Intervals: Flora, p. 157
Introrse (anthers), 72.
Introduced: brought from another country.
Inverted: turned upside down.
Involucel, 58.
Involucre, 58.
Involute: with the margins rolled inward.
Irregular (flowers), 66.

Jointed: separating across into pieces; furnished with joints.

Keel: a sharp longitudinal ridge on the back of an organ; Flora, p. 86.
Keeled: see Carinate.
Kidney-shaped: heart-shaped, but the width greater than the length.

Labellum: the odd petal (lip) of the Orchis Family.
Labiate: divided into an upper and lower lobe or lip.
Laciniate: divided into irregular lobes.
Lamellate: formed of thin plates.
Lamina: the blade of a leaf, &c.
Lanceolate: lance-shaped.
Lanuginous: woolly.
Lateral: placed at, or pertaining to the side.
Leaf, 33.
Leaflet, 36.
Leathery: see Coriaceous.
Legume, 88.
Lenticular: like a double-convex lens.
Liber, 31.
Ligulate: strap-shaped.
Ligula: Flora, p. 545.
Limb: the expanded part of a leaf, &c.
Linear: long and narrow, with parallel margins.
Lip: see Labellum and Labiate.
Lobe: one of the parts of a divided body.
Loculicidal, 89.
Lunate: crescent-shaped.
Lyrate: pinnatifid, with the upper lobes enlarged.

Marginal: borne on, or pertaining to, the edge or margin.
Medullary Rays, 30.
Medullary Sheath, 29.
Membranous: of the texture of membrane.
Mericarp: Flora, p. 157.
Micropyle, 100.
Midrib: the prolongation of the petiole through the limb of a leaf.
Monadelphous, 70.
Monandrous: bearing one stamen.
Moniliform: bearing short joints; like a string of beads.
Monochlamydeous: bearing only one row of floral envelopes.
Monocotyledonous, 104.
Monœcious, 67.
Monopetalous: with the petals united into one piece.
Monosepalous: with the sepals united into one piece.
Mucronate: tipped with an abrupt slender point.
Muricate: beset with hard wart-like points.

Naturalized: introduced, but propagating freely by seed.

Necklace-shaped: see Moniliform.
Nectary: any honey-bearing part.
Nerved (leaves), 40.
Netted-veined, 40.
Neutral (flowers): without stamens and pistils.
Nodding: turning outward or downward.
Nodes, 14.
Nodose: knotty.
Nut, 96.
Nutlet: same as Achenium.

Obcordate: inversely heart-shaped.
Oblanceolate: inversely lance-shaped.
Oblique: unequal-sided.
Oblong: narrower than Elliptical, with nearly parallel margins.
Obovate: egg-shaped, with the narrow end downward.
Obtuse: blunt; not pointed.
Ochrea, 38.
Octandrous: having eight stamens.
One-sided: borne one side of the axis.
Opaque: dull.
Opposite: placed directly against each other, as leaves on the stem; placed before, as stamens before the petals.
Orbicular: circular.
Organs, 6.
Orthotropous, 83.
Oval: same as Elliptical.
Ovary, 76.
Ovate: egg-shaped.
Ovoid: a solid with an oval outline.
Ovule, 76.

Palate: a prominence at the throat of some bilabiate flowers.
Palea: Flora, p. 545.
Palmate: hand-shaped; when the lobes or divisions spread from a common centre.
Palmately-veined, 41.
Panicle, 59.
Papery: of the texture of paper.
Papilionaceous (flower): Flora, p. 86.
Papillose: studded with minute wart-like prominences.
Pappus: the limb of the calyx of composite flowers.
Parallel-veined, 40.
Parasitical: supported and nourished by other plants.
Parietal, 81.
Parted: divided nearly to the base.
Partial: pertaining to the parts of a compound organ.
Pectinate: cut into fine parallel lobes.
Pedate: nearly as palmate, but with the lateral lobes divided.
Pedicel, 50.
Pedicelled: raised on a pedicel.
Peduncle, 50.
Peduncled: raised on a peduncle.
Peltate: fixed to the stalk at a point within the margins.
Pendent: hanging, drooping.
Pendulous: somewhat drooping.
Penicillate: see Brush-shaped.
Pentandrous: having five stamens.
Pepo, 91.
Perennial: lasting from year to year.
Perfect Flowers, 66.
Perfoliate: growing around the stem.
Perianth, 65.
Pericarp: the walls of the fruit.
Perigynium: Flora, p. 532.
Perigynous, 70.
Persistent: remaining late, as opposed to deciduous.
Personate: bearing a palate.
Petal, 64.
Petaloid: petal-like; colored like a petal.
Petiole: the stalk of a leaf.
Petioled: borne on a petiole.
Petiolule: the stalk of a leaflet.
Petiolulate: raised on a petiolule.
Phænogamous Plants, 106.
Pilose: beset with stiff straight hairs.
Pinnæ: the primary divisions of a pinnately compound leaf.
Pinnate, 43.
Pinnately divided, 43.
Pinnules: the secondary divisions of a pinnately compound leaf.
Pistil, 74.
Pith, 29.
Pitted: marked with fine indentations.
Placenta, 81.
Plaited, 68; folded lengthwise.
Plumose: feathery.
Plumule, 103.
Pollen, 71.
Pollinia: the pollen-masses of the Milkweed.
Polyandrous: bearing many stamens.
Polypetalous and Polysepalous: applied to a corolla or calyx with separate petals or sepals.
Polymorphous: of various forms.
Pome, 92.
Prickles: sharp and rigid appendages of the cuticle.
Prickly: beset with prickles.
Primine, 82.
Prismatic: angular, with flat sides.
Process: a prominence or projection.
Procumbent: resting on the ground.
Produced: prolonged.
Proliferous: where a cluster of flowers arises out of another cluster.
Prostrate: see Procumbent.
Pubescence: hairiness in general.
Pubescent: hairy or downy.
Pulverulent: covered with fine powder.
Punctate: dotted.
Pungent: ending in an abrupt hard point.
Pyramidal: pyramid-shaped.
Pyriform: pear-shaped.

Quinate: bearing five leaflets.

Raceme, 55.
Rachis, 50.

Rays, 57; the marginal flowers a head or cyme; the partial stalks of an umbel.
Radiate or Radiant: bearing rays; diverging from a centre.
Radical: near or belonging to the root.
Radicle, 103.
Raphe, 83.
Receptacle, 61.
Reclining: leaning or falling to one side.
Recurved: } bent gradually backward.
Reflexed: }
Refracted: bent abruptly backward, as if broken.
Regular: of uniform shape and size.
Reniform: see Kidney-shaped.
Repand: wavy.
Resupinate: turned upside down.
Reticulate: disposed in little spaces, like network.
Revolute: rolled backward.
Rhizoma, 18.
Rhombic or Rhomboidal: diamond-shaped.
Ribs, 33; longitudinal ridges.
Ribbed: bearing ribs.
Root, 7.
Rootlet, 7.
Rootstock, 18.
Rostrate: beaked.
Rotate: wheel-shaped; with a short tube and a spreading limb.
Rudimentary: imperfectly developed.
Rugose: uneven; wrinkled.
Ruminated (albumen): divided into lobes.
Runcinate: same as lyrate, but with the lobes directed backward.
Runner, 23.

Sagittate: arrow-shaped.
Samara, 97.
Scabrous: rough.
Scales: reduced leaves, or any small and thin appendage.
Scaly: beset with scales; of the texture of scales.
Scape, 50.
Scarious: very thin and colorless.
Scurfy: covered with minute scales.
Secund: one-sided.
Seed, 99.
Segment: one of the parts of a divided leaf, &c.
Sepal, 63.
Septicidal, 89.
Serrate: with the margin cut into teeth like a saw.
Serrulate: finely serrate.
Sessile: not raised on a stalk.
Setaceous: bristle-like.
Sheath: the base of a leaf when it is wrapped round the stem.
Sheathing: enclosing the stem like a sheath.
Shield-shaped: see Peltate.
Shrub, 26.
Silicle and Silique, 90.
Silky: clothed with fine appressed shining hairs.
Silvery: white and shining.
Simple: of one piece.
Sinuate: with the margins cut into rounded incisions (sinuses) which are separated by rounded lobes.
Solitary: standing alone.
Sorus: the fruit cluster of ferns.
Spadix, 54.
Spathe, 54.
Spatulate: dilated into a broad and rounded summit, from a slender base.
Species, 111.
Specific: pertaining to a species.
Spike, 52.
Spikelet: a small spike, or a branch of a spike.
Spindle-shaped: see Fusiform.
Spine, 24.
Spiny: armed with spines; spine-like.
Spiral Vessels, 5.
Sporangia: Flora, p. 585.
Spores: Flora, p. 585.
Spur: a hollow appendage of the calyx or the corolla.
Spurred: furnished with a spur.
Squarrose: covered with spreading scales.
Stamen, 69.
Staminate: bearing stamens.
Standard: Flora, p. 86.
Stellate or Stellar: radiating from a common centre.
Stem, 13.
Stemless, 13.
Sterile: unfruitful; imperfect.
Stigma, 78.
Stigmatic: belonging to the stigma.
Stipe: the stalk of an ovary or of a fern-leaf.
Stipel, 38.
Stipellate: furnished with stipels.
Stipule, 38.
Stipulate: furnished with stipules.
Stolon, 22.
Stoloniferous: bearing stolons.
Stomata, 33.
Strap-shaped: long and flat, with parallel margins.
Striate: marked with fine furrows.
Strigose: bristly with rigid appressed hairs.
Strobile, 98.
Style, 77.
Subulate: awl-shaped.
Sulcate: marked with deep furrows.
Suspended: hanging.
Suture, 80.
Syngenesious, 72.
System, 115.

Tap-root, 8.
Tendril, 25.
Terete: cylindrical; round.
Ternate: of three leaflets; three in a whorl.

Testa: the covering of the seed.
Tetramerous: in parts of four.
Tetrandrous: having four stamens.
Thorn, 24.
Throat: the orifice of a tubular corolla, calyx, &c.
Tomentose: clothed with a close velvety pubescence.
Toothed: see Dentate.
Top-shaped: like an inverted cone.
Torose, or Torulose: knotted; knobby.
Torus, 61.
Tree, 26.
Triandrous: having three stamens.
Tribe: a subdivision of an order.
Trichotomous: dividing into three branches.
Trifoliolate: bearing three leaflets.
Truncate: ending abruptly, as if cut off.
Tube: the united part of a calyx or corolla.
Tuber, 19.
Tubercle: a wart-like appendage; Flora, p. 504.
Tubercled: bearing tubercles, or crowned with a tubercle.
Tuberous: like a tuber.
Tubular: shaped like a tube.
Tumid: swelled; thickened.
Tunicated Bulb, 21.
Twin: in pairs; a pair united.
Twining: rising by coiling around a support.

Umbel, 57.
Umbelled: arranged in an umbel.
Umbellet, 57.
Unarmed: destitute of thorns, prickles, &c.
Uncinate: hooked.
Undulate: wavy.
Unequally pinnate, 43.
Unguiculate: clawed.
Unifoliolate: bearing a single leaflet.
Urceolate: urn-shaped; pitcher-shaped.
Utricle, 95.
Utricular: formed like a utricle.

Valve, 85.
Valvate, 68: opening by valves.
Variety, 111.
Vascular Tissue, 5.
Vaulted: arched.
Veins, 33.
Veiny: furnished with reticulated veins.
Veinlets: the ultimate branches of veins.
Venation, 39.
Ventral Suture, 80.
Ventricose: inflated.
Vernation, 34.
Versatile, 72.
Vertical: with the edges directed upward and downward, and the sides facing the horizon.
Vessels, 2.
Vexillum: Flora, p. 86.
Villous: woolly.
Virgate: wand-like; long and slender.
Viscid: clammy; glutinous.
Vittæ: Flora, p. 157.

Waxy: like beeswax.
Wedge-shaped: broad at the summit, and tapering regularly to the base.
Wheel-shaped: see Rotate.
Whorl: a collection of parts arranged in a ring or circle.
Whorled: disposed in a whorl.
Wing: Flora, p. 86; any thin expansion.
Winged: furnished with wings.
Wood, 30.
Woody: of the texture of wood.
Woody Fibre or Woody Tissue, 4.
Woolly: clothed with long and dense soft hairs.

III. ABBREVIATIONS OF THE NAMES OF AUTHORS.

Adans. =	Adanson.
Ait.	Aiton.
All.	Allioni.
Andr.	Andrews.
Arn.	Arnott.
Aubl.	Aublet.
Baldw.	Baldwin.
Bartr.	Bartram.
Beauv.	Palisot de Beauvois.
Benth.	Bentham.
Bigel.	Bigelow.
Boerh.	Boerhaave.
Brongn.	Brongniart.
Buckl.	Buckley.
Cass.	Cassini.
Catesb.	Catesby.
Cav.	Cavanilles.
Chapm.	Chapman.
Chois.	Choisy.
Darl.	Darlington.
DC.	De Candolle.
A. DC.	Alphonse de Candolle.
Desf.	Desfontaines.
Desv.	Desveaux.
Dew.	Dewey.
Dill.	Dillenius.
Ehrh.	Ehrhart.
Ell.	Elliott.
Endl.	Endlicher.
Engelm.	Engelmann.
Fisch.	Fischer.
Forst.	Forster.
Gært.	Gærtner.
Gaud.	Gaudin.
Ging.	Gingins.
Gmel.	Gmelin.
Good. =	Goodenough.
Griseb.	Grisebach.
Gronov.	Gronovius.
Haw.	Haworth.
H. B. K.	Humboldt, Bonpland, and [Kunth.
Hoff.	Hoffmann.
Hook.	Hooker.
Houst.	Houston.
Huds.	Hudson.
Jacq.	Jacquin.
Juss.	Jussieu.
L. or Linn.	Linnæus.
Lag.	Lagasca.
Lam.	Lamark.
Lehm.	Lehmann.
L'Herit.	L'Heritier.
Lindl.	Lindley.
Marsh.	Marshall.
Mart.	Martius.
Mey.	Meyer.
Michx.	Michaux.
Michx. f.	Michaux the younger.
Mill.	Miller.
Mœnch.	Mœnchausen.
Muhl.	Muhlenberg.
Murr.	Murray.
Neck.	Necker.
Nees.	Nees von Esenbeck.
Nutt.	Nuttall.
Panz.	Panzer.
Pers.	Persoon.
Plum.	Plumier.
Poir.	Poiret.
Raf.	Rafinesque.
R. Br.	Robert Brown.
R. & S.	Roemer & Schultes.

Rich.	=	Richard.	*Tourn.*	=	Tournefort.
Salisb.		Salisbury.	*Trin.*		Trinius.
Schk.		Schkuhr.	*Tuck.*		Tuckerman.
Schrad.		Schrader.	*Vent.*		Ventenat.
Schreb.		Schreber.	*Wahl.*		Wahlenberg.
Schw.		Schweinitz.	*Wang.*		Wangenheim.
Scop.		Scopoli.	*Walt.*		Walter.
Shuttlw.		Shuttleworth.	*Wallr.*		Wallroth.
Sulliv.		Sullivant.	*Wendl.*		Wendland.
Torr.		Torrey.	*Willd.*		Willdenow.

IV. SIGNS USED IN THIS WORK.

① An annual plant.
② A biennial plant.
♃ A perennial plant.
° The length in feet; as, “2° long,” two feet long.
′ The length in inches; as, “2′ long,” two inches long.
″ The length in lines; as, “2″ long,” two lines long.
(*) Placed at the end of a specific character, denotes that the species is not well known.

Two adjectives connected by a hyphen denote a form intermediate between the two; as, “ovate-lanceolate,” between ovate and lanceolate.

Two figures connected by a dash, as “stem 4°–6° long,” denote that the length of the stem varies from four to six feet.

n. sp. } indicate that the species, or genus, is new, or has not been previously
n. gen. } characterized.

V. DIRECTIONS TO THE STUDENT.

Having acquired a general knowledge of the principles of botany, and of the meaning of the peculiar terms employed in the science, the student proceeds to study or analyze plants, with a view to determine their names, and the place they occupy in the system.

His chief difficulty, at the outset, will be to ascertain to which one of the 164 natural orders or families contained in this work the plant he may have in hand belongs. Were he to attempt to compare it with the characters of each order successively, the task would be tedious and discouraging.

To obviate this, and to enable him to refer any unknown plant directly to its proper place in the Flora, some guide, such as is supplied by the following Analysis of the Natural Orders, will be necessary. One or two examples will best explain its use.

Suppose we have in hand a flowering branch of the Linden-Tree or Basswood. Turning to the Analysis on page xxix., we compare it, first, with the Series of Phænogamous Plants, with which we find it to agree in having flowers.

Then, dividing the branch across, we see if it is made up of pith, wood, and bark; if the leaves are netted-veined; and if the floral envelopes are in fours or fives. Exhibiting these peculiarities, it doubtless belongs to the Class of Dicotyledonous Plants; although, in consequence of the minuteness of the seed, we have not been able to ascertain the number of the cotyledons.

We next see if the ovules are contained in an ovary. This being clearly the case, it comes under the Subclass of Angiospermous Plants. The double floral envelopes, and the separate petals of the corolla, carry it to the Polypetalous Division.

Our attention is next directed to the insertion of the stamens and petals,—whether on the calyx, or hypogynous. In our plant they are hypogynous. Then, if the stamens are more than twice as many as the petals. They are so in ours. Then, if the leaves are opposite or alternate. In ours they are alternate. Then, if the ovaries are more than one, or solitary and 1-celled, or solitary and 2–many-celled. In ours they are solitary and 5-celled; bringing it under the last alternative. Then, if the stamens are in any way connected with the petals, or free from them. In ours they are free. Lastly, whether they are united into a tube, or in clusters, or are all separate. In ours they are are united in five clusters, and the sepals are deciduous. This brings our plant to the *natural order*, TILIACEÆ, 59, — the number referring to the page of the Flora where the order is described.

Turning to that page, and comparing our plant with the character of the order, we notice their agreement.

We then proceed to find the name of the genus. This is readily done, in this instance, by comparing the plant with the two genera comprised in this order. With the first it will be found to agree in every particular, and therefore we need not carry it further. We find, then, the plant in question to be a species of the genus TILIA, so named by Tournefort, and commonly called *Linden* or *Basswood.*

Again, suppose the plant under consideration to be the common Bear-Grass. Having flowers, it is, of course, *Phænogamous.* But, cutting across the stem, we find, in the place of pith, wood, and bark, a white mass of cellular tissue, studded with minute points, which are the ends of the divided threads of woody fibre; the veins of the leaf run parallel from the base to the apex; the floral envelopes are in two rows of three each; and the embryo, if examined, will be found to have but one cotyledon. In these respects, our plant differs widely from the Class of Dicotyledonous Plants, and we therefore turn to its alternative, the CLASS OF MONOCOTYLEDONOUS PLANTS, on page xxxvii. of the Analysis, which, we observe, includes plants possessing these characters.

Our plant, having the floral envelopes double, and not glumaceous, falls under the second heading, marked with two stars (* *).

Proceeding as in the former example, and carefully comparing the plant with the analysis that follows, we see, first, if the ovary is adherent with, or free from, the perianth. In ours it is free. Then, if the perianth is single, or double. In ours it is double. Then, if the calyx and corolla are alike or unlike. In ours they are alike. Then, if the leaves of the perianth are glume-like, or otherwise. In ours they are not glume-like. Then, if the leaves are netted-veined or parallel-veined. In ours they are parallel-veined. Then, if the capsule is 1-celled, or 3–6-celled. In ours it is 6-celled. Lastly, if the anthers are introrse or extrorse In ours they are introrse.

This brings us to the natural order LILIACEÆ, described on page 480 of the Flora. It contains ten genera, belonging to three tribes, the characters of which are briefly given in the Synopsis. Our plant, by its capsular fruit, the separate divisions of the perianth, and leafy stem, comes under the third tribe, TULIPACEÆ. Of the two sections, marked with a star (*), our plant belongs to the second; having a Palm-like stem. No. 10, Yucca, alone remains; and to it our plant must belong.

Turning to page 485, where this genus is more fully described, we find it to embrace four species, divided into two sections based upon the character of the stem and capsule. The short stem (excluding the scape) and dry capsule of our plant belong to the former. It contains but one species, Y. filamentosa, L., which we therefore find to be the botanical name of the plant in question.

VI. ARTIFICIAL ANALYSIS OF THE NATURAL ORDERS.

SERIES I. PHÆNOGAMOUS OR FLOWERING PLANTS.

Plants furnished with flowers, consisting of stamens and pistils, and producing seeds which contain an embryo plant.

CLASS I. DICOTYLEDONOUS OR EXOGENOUS PLANTS.

Stem composed of bark and pith, with an interposed layer of woody fibre and vessels, and increasing in diameter, in all perennial stems, by the annual deposition of a new layer between the wood and bark. Leaves netted-veined, commonly articulated with the stem. Floral envelopes usually in fours or fives. Cotyledons two, rarely more.

SUBCLASS I. ANGIOSPERMOUS EXOGENOUS PLANTS.

Ovules contained in an ovary, and fertilized by the action of the pollen, through the medium of a stigma. Cotyledons two.

DIVISION I. POLYPETALOUS EXOGENOUS PLANTS.

Floral envelopes double, consisting of both calyx and corolla; the latter of separate petals.

* *Stamens and petals free from the calyx, hypogynous or nearly so.*

+ *Stamens more than twice as many as the petals.*

		Page
Ovaries two or more, 1-celled.		
Shrubs, trees, or woody vines.		
Petals imbricate. Flowers small, diœcious. Woody vines.	MENISPERMACEÆ,	14
Flowers large, perfect. Trees.	MAGNOLIACEÆ,	11
Petals valvate. Flowers solitary, nodding. Fruit pulpy. Shrubs.	ANONACEÆ,	13
Herbs.		
Leaves peltate. Aquatic.		
Ovaries in cavities at the top of a large receptacle.	NELUMBONEÆ,	18
Ovaries on the receptacle. Leaves glutinous beneath.	CABOMBEÆ,	17
Leaves not peltate.		
Stamens separate. Leaves exstipulate.	RANUNCULACEÆ,	2
Stamens monadelphous. Leaves stipulate.	MALVACEÆ,	45
Ovary solitary, 1-celled.		
Leaves opposite, pellucid-punctate, entire.	HYPERICACEÆ,	55

Leaves alternate.
Sepals 2. Leaves entire. Placenta central. PORTULACACEÆ, 38
Leaves lobed. Placenta parietal. PAPAVERACEÆ, 20
Sepals 4. Fruit indehiscent. Leaves entire. Shrubs.
Fruit valvate. Leaves 3–7-foliolate. Herbs. } CAPPARIDACEÆ, 31
Sepals 5. Leaves small, entire. Two outer sepals small and bract-like.
CISTACEÆ, 35
Leaves large, 3-ternate. Fruit a follicle. CIMICIFUGÆ, 2
Leaves all radical, fringed, irritable. DROSERACEÆ, 19
Sepals united into a 4–5-toothed calyx. Leaves compound. Flowers capitate.
MIMOSEÆ, 96, 126
Ovary solitary, 2- or more-celled.
Shrubs or trees.
Leaves opposite. Sepals 5. Stamens separate. HYPERICACEÆ, 55
Sepals 6. Stamens united. CLUSIACEÆ, 60
Leaves alternate, stipulate. Stamens monadelphous. MALVACEÆ, 45
Stamens separate, or in clusters. TILIACEÆ, 54
Leaves alternate, exstipulate.
Flowers perfect. Stamens on the base of the petals. CAMELLIACEÆ, 61
Flowers monœcious. Stamens hypogynous. Capsule 3-celled, 3-seeded.
Herbs. EUPHORBIACEÆ, 421
Flowers irregular. Stamens 6 or 8. Petals 3. POLYGALACEÆ, 88
Flowers regular. Leaves exstipulate, opposite, entire. HYPERICACEÆ, 55
Leaves exstipulate, alternate, tubular. SARRACENIACEÆ, 18
Leaves stipulate. Stamens monadelphous. MALVACEÆ, 45

← ← *Stamens twice as many as the petals.*

Stamens 12–20. Leaves peltate, lobed. Flowers solitary, nodding. PODOPHYLLUM, 16
Stamens 10.
Leaves compound.
Leaves stipulate, alternate. Fruit a legume. LEGUMINOSÆ, 93
opposite. Fruit separating into indehiscent carpels.
ZYGOPHYLLACEÆ, 67
Leaves exstipulate, trifoliolate, the leaflets obcordate. Herbs. OXALIDACEÆ, 65
pinnate. Flowers diœcious. Trees. BURSERACEÆ, 71
pinnate or bipinnate. Flowers perfect. Trees. MELIACEÆ, 63
Leaves simple.
Herbs.
Flowers monœcious. Capsule 3-celled, 3-seeded. EUPHORBIACEÆ, 421
Flowers perfect. Leaves alternate, or 3 in a whorl. Stamens 8 or 10.
CRASSULACEÆ, 149
Leaves alternate, palmately lobed. Fruit of 5 elastic carpels.
GERANIACEÆ, 66
Leaves opposite, entire, dotted. Flowers yellow.
HYPERICACEÆ, 55
Leaves opposite, or whorled, not dotted. Flowers never yellow.
Trees or shrubs. CARYOPHYLLACEÆ, 39
Leaves stipulate, lobed. Fruit uncinate-hispid. TILIACEÆ, 54
Leaves exstipulate, entire. Cells of the capsules 1-seeded. CYRILLACEÆ, 83
Cells of the capsule many-seeded. ERICACEÆ, 279
Stamens less than 10 (two exceptions).
Petals 3. Stamens 6 or 8, united in one or two sets. Flowers irregular.
POLYGALACEÆ. 88
Petals 3. Stamens 6. Aquatic herbs, with finely dissected opposite leaves.
CABOMBEÆ, 17
Petals 3–5. Stamens 6–10. Leaves trifoliolate. Trees. BURSERACEÆ, 71
Petals 4–5. Stamens 8 or 10. Leaves simple, succulent. Flowers cymose.
CRASSULACEÆ, 149
Petals 4. Stamens 8. Leaves simple. Flowers racemose. A shrub. ELLIOTTIA, 288

+ + + Fertile stamens as many as the petals, or fewer.

Ovaries more than one.
Trees, shrubs, or woody vines
Flowers diœcious. Trees or shrubs. Leaves pinnate, punctate. RUTACEÆ, 68
Woody vines. Anthers 4-celled. Stamens separate.
MENISPERMACEÆ, 14
Anthers 2-celled. Stamens united, disk-like.
SCHIZANDREÆ. 11
Flowers perfect. Petals gland-like. Leaves pinnate. ZANTHORHIZA, 10
Herbs. Leaves linear. Scape 1-flowered. Achenia spiked. MYOSURUS, 6
Ovary solitary, 1-celled.
Leaves opposite or whorled.
Sepals 2. Stem 2-leaved. Flowers racemose, purple. PORTULACACEÆ, 38
Sepals 5. Leaves punctate. Placentæ parietal. Flowers yellow.
HYPERICACEÆ, 55
Leaves not punctate. Placentæ central. Flowers red or white.
CARYOPHYLLACEÆ, 39
Leaves alternate, stipulate.
Leaves pinnately compound. Fruit a legume. LEGUMINOSÆ, 93
Leaves simple. Flowers irregular. Capsule many-seeded. VIOLACEÆ, 32
Flowers regular, clustered. Capsule 1-seeded.
BYTTNERIACEÆ, 53
Leaves alternate, exstipulate.
Sepals 2. Stamens 6, diadelphous. Flowers irregular. FUMARIACEÆ, 21
Sepals 4. Stamens 6. Flowers regular. Fruit silique-like. CAPPARIDACEÆ, 31
Sepals 5. Stem a naked or 1-leaved scape.
Scape 1-leaved, 1-flowered. Leaves smooth. PARNASSIACEÆ, 148
Scape naked. Flowers racemose. Leaves bristly, glandular. DROSERACEÆ, 19
Scape paniculately branched. Flowers in 1-sided spikes, blue.
PLUMBAGINACEÆ, 300
Sepals 5. Stem leafy.
Flowers monœcious, the pistillate apetalous. EUPHORBIACEÆ, 421
Flowers perfect, irregular. Fruit spiny. Leaves entire. KRAMERIACEÆ, 92
Flowers perfect, regular. Leaves large, biternate. Fruit follicular.
CIMICIFUGEÆ, 2
Flowers perfect, regular. Leaves small, entire. Outer sepals small
and bract-like. CISTACEÆ, 35
Sepals 6. Anthers opening by uplifted valves. BERBERIDACEÆ, 15
Ovary solitary, 2- or more-celled.
Trees, shrubs, or woody vines.
Leaves opposite or whorled.
Flowers diœcious.
Leaves pinnate. Fruit a samara. OLEACEÆ, 351
Leaves pinnate or lobed. Fruit a double samara. ACERINEÆ, 85
Leaves simple, club-shaped. Ovaries and fruit capitate. BATIDACEÆ, 434
Leaves simple, heath-like, 3 in a whorl. Sepals, petals, and stamens 2.
EMPETRACEÆ, 434
Flowers perfect. Leaves simple, with pellucid dots, entire. HYPERICACEÆ, 55
Leaves digitate. Stem climbing. VITACEÆ, 73
Leaves alternate.
Leaves pinnate. Flowers diœcious. Fruit a drupe. SIMARUBACEÆ, 70
Leaves trifoliolate. Flowers polygamous. Fruit a circular samara. PTELEA, 69
Leaves simple, evergreen. Flowers perfect. Fruit a 2-celled drupe.
CYRILLACEÆ, 83
Leaves simple, deciduous. Flowers monœcious. Fruit a 3-celled capsule.
EUPHORBIACEÆ, 421
Herbs.
Flowers irregular. Sepals 4, the lowest large and saccate, spurred.
Capsule elastically dehiscent. BALSAMINACEÆ, 67

Flowers irregular. Sepals 5, the two lateral ones petal-like. Stamens united in 1 – 2 sets. POLYGALACEÆ, 88
Flowers regular.
Sepals and petals 5. Stamens united.
Stamens 5, united at the base. Styles 5. Leaves exstipulate, entire. LINACEÆ, 64
united at the base or apex. Style single. Leaves stipulate. BYTTNERIACEÆ, 53
united in a tube. Style single. Capsule 3-celled. Leaves all radical. DIAPENSIACEÆ, 290
Stamens 9, united in sets. Leaves opposite, entire, dotted. HYPERICACEÆ, 55
Sepals and petals 4. Stamens 6. Fruit a silique or silicle. CRUCIFERÆ, 23

* * *Stamens and petals inserted on the ovary.*

Floating aquatic. Leaves and flowers long-stalked. Petals and stamens numerous. NYMPHEACEÆ, 17

* * * *Stamens and petals inserted on the calyx, or on a more or less perigynous disk.*

+ *Calyx not adherent to the ovary.*

Stamens fewer than the petals.
A woody vine. Leaves opposite, entire. Fruit 3-winged. HIPPOCRATEÆ, 79
Stamens as many as the petals.
Leaves stipulate.
Stamens monadelphous around the stipe of the ovary. Vines. PASSIFLORACEÆ, 168
Stamens monadelphous or diadelphous. Legume 1 – several-seeded. LEGUMINOSÆ, 93
Stamens separate, alternate with the petals.
Leaves pinnate. Calyx uncinate-hispid. Herbs. AGRIMONIA, 133
Leaves trifoliolate. Capsule inflated, 3-lobed. Shrubs. STAPHYLEACEÆ, 84
Leaves simple. Sepals imbricate. Flowers small, in racemes or cymes. CELASTRACEÆ, 78
Stamens separate, opposite the petals.
Sepals valvate. Leaves entire. Shrubs or trees. RHAMNACEÆ, 75
Calyx truncate. Leaves mostly lobed. Woody vines. VITACEÆ, 73
Leaves exstipulate.
Ovaries, sepals, petals, and stamens 3 or 4. Small annuals. CRASSULACEÆ, 149
Ovaries 5. Leaves simple. Flowers perfect, axillary.
Ovary solitary. Leaves pinnate. Flowers diœcious, terminal. } SIMARUBACEÆ, 70
Leaves opposite. Flowers perfect. Calyx valvate. LYTHRACEÆ, 157
Flowers diœcious. Calyx imbricate. ACERINEÆ, 85
Leaves alternate. Calyx persistent. Aquatic shrub. ITEA, 146
Calyx deciduous. Low perennial. TURNERACEÆ, 167
Stamens more numerous than the petals.
Ovaries more than one.
Leaves alternate, stipulate, mostly lobed. Herbs or shrubs. ROSACEÆ, 129
exstipulate, mostly entire. Succulent herbs. CRASSULACEÆ, 149
Leaves opposite, exstipulate. Sepals and petals numerous and alike. Shrubs. CALYCANTHACEÆ, 142
Ovary solitary.
Leaves simple, stipulate.
Style basal, single. Fruit a drupe. Shrubs. Calyx lobes persistent. CHRYSOBALANEÆ, 129
Style terminal, single. Fruit a drupe. Trees. Calyx lobes deciduous. AMYGDALEÆ, 129
Styles 3. Petals clawed. Leaves opposite. MALPIGHIACEÆ, 88

Leaves simple, exstipulate.
Style single. Leaves opposite or whorled. Flowers axillary. LYTHRACEÆ, 157
Styles 2. Leaves alternate. Flowers terminal, perfect. SAXIFRAGACEÆ, 142
Leaves opposite, lobed. Flowers polygamous. Fruit a samara.
ACERINEÆ, 85
Leaves compound, alternate, pinnate. Flowers polygamous. Trees. BURSERACEÆ, 71
abruptly pinnate or biternate. Flowers
polygamous. Trees. SAPINDACEÆ, 84
pinnate or bipinnate. Stamens monadelphous.
MELIACEÆ, 63
Stamens separate or diadelphous. LEGUMINOSÆ, 93
Leaves compound, opposite, palmately 5-7 foliolate. Stamens 7.
Fruit capsular. HIPPOCASTANEÆ, 85
trifoliolate. Fruit drupaceous. AMYRIS, 69

← ← *Calyx adherent to the ovary.*

Herbs.
Ovary 1-celled. Capsule and 2-lobed calyx circumscissile. PORTULACACEÆ, 38
Capsule 2-3-valved. Stamens 5 or 10. Styles separate.
SAXIFRAGACEÆ, 142
Stamens numerous. Styles united.
LOASACEÆ, 166
Ovary 2-6-celled.
Style single. Anthers opening by a terminal pore. Leaves ribbed.
MELASTOMACEÆ, 155
Anthers opening lengthwise. Leaves ribless. ONAGRACEÆ, 160
Styles or stigmas 2 or more.
Flowers umbelled. Fruit dry, separating into two pieces. UMBELLIFERÆ, 173
Fruit berry-like, of 2-5 nutlets. ARALIACEÆ, 183
Flowers not umbelled.
Flowers perfect. Fruit capsular. Leaves alternate. SAXIFRAGACEÆ, 142
Flowers monœcious. Fruit nut-like. Leaves whorled. HALORAGEÆ, 159
Fruit pulpy. Tendril-bearing vines. CUCURBITACEÆ, 169

Shrubs or trees.
Leaves opposite.
Fruit dry, variously dehiscent, many-seeded. HYDRANGEÆ, 143
Fruit indehiscent, 1-2-seeded.
Stipules between the petioles. RHIZOPHORACEÆ, 152
Stipules none. Leaves dotted. Stamens numerous. MYRTACEÆ, 154
Leaves dotless. Stamens 4. Ovary 2-celled. CORNACEÆ, 184
Leaves dotless. Stamens 10. Ovary 1-celled. COMBRETACEÆ, 152
Leaves alternate.
Flowers umbelled. Leaves compound. ARALIACEÆ, 183
Flowers not umbelled.
Leaves stipulate. Fruit fleshy or baccate, indehiscent. POMEÆ, 130
Fruit dry, woody, 2-valved. HAMAMELACEÆ, 151
Fruit dry, of three 1-seeded nutlets. RHAMNACEÆ, 75
Leaves exstipulate.
Flowers diœcious. Drupe baccate. Sterile flowers apetalous. CORNACEÆ, 184
Flowers perfect. Ovary 3-celled. Fruit a 2-winged nut. }
Ovary 2-5 celled. Fruit a 1-5-seeded berry. } STYRACACEÆ, 291
Ovary 1-celled, with two parietal placentæ. RIBES, 148
Ovary 1-celled, with numerous placentæ. CACTACEÆ, 170

DIVISION II. MONOPETALOUS EXOGENOUS PLANTS.

Floral envelopes double, consisting of both calyx and corolla; the latter of more or less united petals.

* *Calyx free from the ovary.*

+ *Flowers regular.*

++ *Fertile stamens fewer than the lobes of the corolla.*

Fruit a 1-seeded fleshy drupe. Evergreen shrubs or trees.	OLEACEÆ, 351
Fruit separating into 2–4 nutlets.	
Ovary 4-lobed; the style rising from between the lobes.	LABIATÆ, 371
Ovary not lobed; the style terminal.	VERBENACEÆ, 367
Fruit a 2-celled capsule.	
Capsule circumscissile. Leaves alternate, radical.	PLANTAGINACEÆ, 390
Capsule 2-valved. Corolla lobes imbricated in the bud.	SCROPHULARIACEÆ, 306
Corolla lobes twisted in the bud.	ACANTHACEÆ, 363

++ ++ *Fertile stamens as many as the lobes of the corolla and opposite them.*

Herbs. Capsule 1-celled, many-seeded.	PRIMULACEÆ, 297
Trees or shrubs, rarely herbs.	
Anthers introrse. Calyx plaited, glandular. Fruit a utricle.	PLUMBAGINACEÆ, 300
Calyx not plaited. Fruit a drupe. Embryo transverse.	MYRSINACEÆ, 296
Anthers extrorse. Ovary 1-celled. Flowers racemose.	THEOPHRASTEÆ, 296
Ovary 3–8 celled. Flowers clustered.	SAPOTACEÆ, 294

++ ++ ++ *Fertile stamens as many as the lobes of the corolla and alternate with them.*

Ovaries 2, separate.	
Juice milky.	
Stamens united with the stigmas into a mass.	ASCLEPIADACEÆ, 343
Stamens separate and free from the stigma.	APOCYNACEÆ, 341
Juice not milky. Stems creeping. Utricle 1-seeded.	DICHONDREÆ, 326
Ovary solitary.	
Fruit indehiscent.	
Leaves opposite.	
Ovary 2-celled. Drupe 1-seeded. Corolla lobes long.	OLEACEÆ, 351
Ovary 4-celled. Drupe 4-seeded. Corolla lobes short.	VERBENACEÆ, 367
Ovary 4-lobed, the style between the lobes.	LABIATÆ, 371
Leaves alternate.	
Flowers diœcious. Fruit baccate, 4–9 seeded.	ILICINEÆ, 81
Flowers perfect.	
Ovary 2-celled. Corolla plaited or valvate.	SOLANACEÆ, 321
Ovary 4-celled. Corolla mostly imbricated in the bud.	BORRAGINACEÆ, 357
Fruit dehiscent.	
Capsule circumscissile. Flowers on a scape.	PLANTAGINACEÆ, 390
Capsule dehiscent by valves.	
Ovary 1-celled. Leaves lobed, hairy or pubescent.	HYDROPHYLLACEÆ, 354
Leaves bipinnate. Flowers capitate.	MIMOSEÆ, 96
Leaves entire, smooth.	GENTIANACEÆ, 335
Ovary 2–5 celled.	
Stipules membranous or annular between the opposite leaves.	LOGANIACEÆ, 200
Stipules none.	
Capsule few-seeded.	
Stems twining. Leaves alternate. Stems twining. Leaves none.	CONVOLVULACEÆ, 326

Stems not twining. Leaves opposite or alternate.

Stamens 5. Capsule 3-celled. POLEMONIACEÆ, 333

Stamens 4. Capsule 2-celled. ACANTHACEÆ, 363

Capsule many-seeded.

Style single.

Capsule 2-celled. Corolla plaited in the bud. SOLANACEÆ, 321

Capsule 2-celled. Corolla imbricated in the bud. SCROPHULARIACEÆ, 306

Capsule 3-celled. Anthers opening transversely. DIAPENSIACEÆ, 290

Capsule 5-celled. Anthers opening by a terminal chink or pore. ERICACEÆ, 279

Styles 2. Capsule 2-celled. HYDROLEACEÆ, 354

++ ++ ++ ++ *Stamens more numerous than the lobes of the corolla.*

Leaves compound, stipulate. Fruit a legume. MIMOSEÆ, 96

exstipulate. Fruit of 4 carpels. CRASSULACEÆ, 149

Leaves simple.

Flowers diœcious. Ovary 8-celled. Fruit a berry. EBENACEÆ, 293

Ovary 1-celled. Fruit pulpy. PASSIFLORACEÆ, 168

Flowers perfect. Stamens numerous.

Stamens united into a column. Anthers 1-celled. MALVACEÆ, 45

Stamens united in a ring or in clusters at the base. CAMELLIACEÆ, 61

Flowers perfect. Stamens twice as many as the corolla lobes.

Corolla lobes imbricated in the bud. Capsule many-seeded. ERICACEÆ, 279

Capsule 1-seeded, 3-valved. STYRACACEÆ, 291

Corolla lobes valvate in the bud. Drupe 1-seeded. OLACACEÆ, 62

+ + *Flowers irregular.*

Stamens 6. Calyx of 2 sepals. Capsule 1-celled. FUMARIACEÆ, 21

Stamens 6 or 8. Sepals 5, the outer ones petaloid. POLYGALACEÆ, 88

Stamens (the fertile ones) 2 or 4.

Ovary 1-celled. Stamens 2. Corolla spurred. LENTIBULACEÆ, 301

Stamens 4. Fruit 1-seeded, reflexed. PHRYMEÆ, 367

Stamens 4. Fruit many-seeded. Leaves scaly. OROBANCHACEÆ, 305

Ovary 2-celled. Shrubs or woody vines. Corolla large, tubular. Seeds winged. BIGNONIACEÆ, 303

Herbs. Capsule woody, 2-beaked. SESAMEÆ, 303

Capsule many-seeded. Corolla imbricated in bud. SCROPHULARIACEÆ, 306

Capsule few-seeded. Corolla twisted in bud. ACANTHACEÆ, 363

Ovary 4-celled, 4-lobed, the style rising from between the lobes. LABIATÆ, 371

not lobed. Style terminal. VERBENACEÆ, 367

* * *Calyx more or less adherent to the ovary.*

Anthers united.

Anthers contorted. Vines climbing by tendrils. CUCURBITACEÆ, 169

Anthers straight. Flowers in a raceme. Fruit a many-seeded capsule. LOBELIACEÆ, 275

Flowers in a raceme. Fruit a 1–4 seeded drupe. RUBIACEÆ, 190

Flowers in a head. Fruit a dry achenium. COMPOSITÆ, 203

Anthers separate. Leaves opposite or whorled.

Leaves connected by stipules, or whorled. RUBIACEÆ, 190

Stipules none. Chiefly shrubs or woody vines. Stamens 5. CAPRIFOLIACEÆ, 186

Herbs. Flowers cymose. Stamens 1–3. VALERIANACEÆ, 202

Flowers capitate. Stamens 4. DIPSACACEÆ, 203

Anthers separate. Leaves alternate.		
Herbs.		
Corolla lobes valvate in the bud. Capsule opening at the sides.	CAMPANULACEÆ,	278
Corolla lobes imbricated in the bud. Capsule valvate.	PRIMULACEÆ,	297
Shrubs. Flowers irregular. Stigma within a ciliate cup.	GOODENIACEÆ,	277
Flowers regular. Anthers opening by a terminal chink.	VACCINIEÆ,	279
Flowers regular. Anthers opening lengthwise	STYRACACEÆ,	291
Flowers regular. Stamens 4-5, opposite the corolla lobes.	OLACACEÆ,	62

Division III. APETALOUS EXOGENOUS PLANTS.

Floral envolopes single, consisting of a calyx only, or altogether wanting.

* *Amentaceous trees or shrubs. Flowers monœcious or diœcious.*

+ *Only the sterile flowers in aments.*

Leafless. Branches grooved and sheathed.	CASUARINACEÆ,	454
Leaves simple, stipulate. Involucre scaly. Seed entire.	CUPULIFERÆ,	443
Leaves pinnate, exstipulate. Involucre none. Seed 4-lobed.	JUGLANDACEÆ,	441

+ + *Both the sterile and fertile flowers in aments.*

Aments globose. Calyx none.		
Fruit 2-beaked, 2-valved, many-seeded. Sterile aments spiked.	HAMAMELACEÆ,	151
Fruit nut-like. 1-seeded, hairy. Aments single.	PLATANACEÆ,	441
Aments oblong or linear.		
Ovary 1-celled. Drupe 1-seeded.		
Leaves persistent. Drupe waxy granular.	MYRICACEÆ,	449
Leaves deciduous. Drupe smooth.	LEITNERIACEÆ,	450
Capsule 2-valved, many-seeded. Seed comose.	SALICACEÆ,	452
Ovary 2-celled. Fruit dry, angled or winged.	BETULACEÆ,	451
Fruit enclosed in the confluent berry-like calyx.	MORACEÆ,	437

* * *Flowers not in aments.*

+ *Calyx and corolla none*

Ovaries 3-4, united below. Leaves cordate. Stamens 4-8. Ovary single. Leaves obovate. Stamens 2.	PIPERACEÆ,	418
Involucre none. Capsule 4-celled. Aquatic.	CALLITRICHACEÆ,	420
Involucre spathe-like. Styles 2. Leaves alternate, parted.	PODOSTEMACEÆ,	420
Involucre 8-12 parted. Style one. Leaves whorled, forked.	CERATOPHYLLACEÆ,	419
Involucre 4-5 toothed, cup-like, containing one fertile flower and several sterile ones, each reduced to a single stamen.	EUPHORBIACEÆ,	421

+ + *Calyx herbaceous or corolla-like.*

Ovaries more than one.		
Stamens inserted on the calyx. Leaves stipulate.	ROSACEÆ,	129
Stamens hypogynous. Stipules none.		
Embryo minute.	RANUNCULACEÆ,	2
Embryo and seeds large, curved.	MENISPERMACEÆ,	14
Ovary solitary.		
Calyx adherent to the ovary.		
Ovary 1-celled.		
Fruit a 2-valved, many-seeded capsule.	SAXIFRAGACEÆ,	142
Fruit indehiscent, 1-seeded.		
Anthers (and stigma) sessile. Tree parasites.	LORANTHACEÆ,	418
Anthers on filaments.		
Drupe berry-like. Stigma decurrent.	CORNACEÆ,	184
Drupe dry. Albumen copious. Root parasites.	SANTALACEÆ,	416
Drupe dry. Albumen none. Trees.	COMBRETACEÆ,	152

Ovary 2–6 celled.
Herbs. Stamens 5–12. Capsule many-seeded. Leaves cordate. ARISTOLOCHIACEÆ, 391
Stamens 4. Leaves not cordate, entire. ONAGRACEÆ, 160
Stamens 3 or 8. Capsule 3–4-seeded. Leaves dissected. HALORAGEÆ, 159
Trees or shrubs. Capsule 2-valved. Leaves alternate. HAMAMELACEÆ, 151
Fruit a berry. Leaves opposite. MYRTACEÆ, 154
Fruit a 1-seeded drupe. Calyx lobes valvate. RHAMNACEÆ, 75
Calyx free from the ovary.
Ovary 1-celled.
Ovules and seeds numerous.
Fruit baccate. Tendril-bearing vines. PASSIFLORACEÆ, 168
Fruit a capsule.
Capsule circumscissile. Leaves alternate. CELOSIEÆ, 398
Capsule valvate. Leaves opposite. CARYOPHYLLACEÆ, 39
Ovule and seed solitary. Leaves stipulate.
Stipules sheathing. Leaves alternate. POLYGONACEÆ, 406
Stipules scarious. Leaves opposite. ILLECEBRACEÆ, 396
Stipules not sheathing nor scarious.
Flowers perfect, spiked. Achenium 2-lobed, spiny. Herbs. PETIVERIEÆ. 395
clustered. Drupe baccate. Shrubs. RHAMNACEÆ, 75
Flowers imperfect.
Herbs. Stems twining. Leaves 3–5-lobed: CANNABINACEÆ, 437
Stems not twining. Leaves serrate or entire. URTICACEÆ, 434
Trees or shrubs. Juice watery. Flowers single or clustered. ULMACEÆ, 439
Juice milky. Flowers included in a fleshy receptacle. MORACEÆ, 437
Ovule and seed solitary. Leaves without stipules.
Stamens more numerous than the calyx lobes.
Anthers opening by valves. LAURACEÆ, 414
Anthers opening lengthwise.
Calyx 5–6 parted. POLYGONACEÆ, 406
Calyx entire. Berry oval. THYMELEACEÆ, 416
Stamens equalling in number or fewer than the calyx lobes.
Flowers with scarious bracts. AMARANTACEÆ, 398
Flowers without scarious bracts.
Calyx corolla-like, plaited. NYCTAGINACEÆ, 393
Calyx herbaceous. Styles 2. CHENOPODIACEÆ, 403
Ovary 2–12-celled.
Leaves whorled.
A heath-like shrub. Calyx of imbricated scales. EMPETRACEÆ, 434
A prostrate annual. Calyx corolla-like. MOLLUGINEÆ, 172
Leaves opposite.
Fruit a single samara. Calyx minute, persistent. FRAXINEÆ, 352
Fruit a double samara. Calyx deciduous. ACERINEÆ, 85
Fruit a drupe. Flowers perfect. Stamens on the calyx. RHAMNACEÆ, 75
Flowers diœcious. Stamens hypogynous. FORESTIEREÆ, 352
Fruit a many-seeded capsule. Valvate. LYTHRACEÆ, 157
Circumscissile. FICOIDEÆ, 172
Leaves alternate.
Ovules and seeds 1–2 in each cell.
Flowers mono-diœcious. Fruit a drupe or capsule. EUPHORBIACEÆ, 421
Flowers polygamous. Capsule 3–4-winged. SAPINDACEÆ, 84
Flowers perfect or polygamous.
Fruit a berry. Calyx colored. PHYTOLACCACEÆ, 395
Fruit a samara. Leaves stipulate. ULMACEÆ, 439
Ovules and seeds numerous in the cells. Capsule circumscissile.
Capsule 3-celled. Flowers solitary. PORTULACACEÆ, 38
Capsule 5-celled. Flowers cymose. CRASSULACEÆ, 149

SUBCLASS II. GYMNOSPERMOUS EXOGENOUS PLANTS

Ovules naked (not contained in an ovary), supported by an open scale or leaf, or else terminating a branch, and fertilized by the direct application of the pollen.

Stem branching. Leaves simple. **CONIFERÆ, 455**
Stem simple, palm-like. Leaves pinnate. **CYCADACEÆ, 460**

CLASS II. MONOCOTYLEDONOUS OR ENDOGENOUS PLANTS.

Stem composed of cellular tissue and scattered bundles of woody fibre and vessels, destitute of proper pith, bark, or concentric layers, and increasing in diameter by the deposition of new fibrous bundles. Leaves mostly alternate, entire, and parallel-veined, commonly sheathing at the base, seldom falling off by an articulation. Floral envelopes usually by threes. Cotyledon single.

* *Floral envelopes none. Flowers on a spadix.*

Stemless, floating herbs.
Plants frond-like, with no distinction of stem and leaves. **LEMNACEÆ, 466**
Leaves clustered, spreading. Flowers axillary. **Pistia in ARACEÆ, 465**
Caulescent, leafy, rooting herbs.
Fruit a berry. Spadix enclosed in a spathe. **ARACEÆ, 464**
Fruit an achenium. Stem immersed, floating. **NAIADACEÆ, 468**
Stem not immersed, erect. **TYPHACEÆ, 467**

* * *Floral envelopes (perianth) single or double, not glumaceous.*

Ovary adherent to the perianth.
Stamens and pistil united into a column. Flowers irregular. **ORCHIDACEÆ, 477**
Stamens and pistil separate.
Flowers monœcious or diœcious.
Flowers enclosed in a spathe in the bud. Aquatics. **HYDROCHARIDACEÆ, 475**
Flowers without a spathe. Leaves reticulate. Terrestrial vines. **DIOSCOREACEÆ, 501**
Flowers perfect.
Ovary 1-celled. Stamens 3. Leaves minute. **BURMANNIACEÆ, 476**
Ovary 3-celled. Stamen 1. Flowers irregular. **CANNACEÆ, 491**
Stamens 3. Anthers extrorse. **IRIDACEÆ, 499**
Stamens 3 or 6. Perianth woolly or scurfy. **HÆMODORACEÆ, 496**
Stamens 6. Perianth smooth or hairy. **AMARYLLIDACEÆ, 492**
Ovary free from the perianth.
Perianth single (calyx).
Flowers on a spadix. Ovary solitary. **ARACEÆ, 464**
Ovaries 4. Stem leafy. **NAIADACEÆ, 468**
Flowers on a scape, spiked. Leaves rush-like. **JUNCAGINEÆ, 520**
Flowers on axillary peduncles. Leaves oval. **ROXBURGHIACEÆ, 506**
Perianth double (calyx and corolla).
Calyx and corolla alike, or nearly so, and glume-like. **JUNCACEÆ, 519**
Calyx and corolla alike, or nearly so, and not glume-like.
Leaves ribbed and netted-veined. Fruit a berry. **SMILACEÆ, 502**

Leaves parallel-veined.
  Capsule 1-celled. Stamens, or the fertile ones, three. PONTEDERIACEÆ, 523
  Capsule or berry 3- (rarely 4 or 6-) celled.
    Anthers introrse (except Lilium). Style single.
      Stigmas 3, nearly sessile. } LILIACEÆ, 507
      Styles 3. }
    Anthers extrorse (except Tofieldia). Styles 3 or 1. } MELANTHACEÆ, 513
Calyx and corolla unlike.
  Ovaries few or numerous, forming achenia in fruit. ALISMACEÆ, 472
  Ovary solitary.
    Palms. Calyx tubular. Leaves fan-shaped. PALMÆ, 461
    Epiphytes. Plants scurfy. BROMELIACEÆ, 497
    Herbs. Stamens 6. Leaves 3 in a whorl. Flower single. TRILLIACEÆ, 502
      Leaves alternate, sheathing. COMMELYNACEÆ, 524
      Stamens 3. Flowers perfect, solitary. Stem leafy. MAYACACEÆ, 526
        Flowers perfect, capitate. Scape leafless. XYRIDACEÆ, 526
      Stamens 3 or 4. Flowers monœcious, capitate. Scape leafless. ERIOCAULONACEÆ, 529

* * * *Flowers glumaceous, i. e. with scale-like bracts, in place of proper floral envelopes.*

Bracts single. Sheaths closed. Fruit an achenium. CYPERACEÆ, 531
Bracts by pairs. Sheaths open. Fruit a caryopsis. GRAMINEÆ, 573

SERIES II. CRYPTOGAMOUS OR FLOWERLESS PLANTS.

Plants destitute of proper flowers, and producing, in place of seeds, minute bodies (spores) which do not contain an embryo.

CLASS III. ACROGENS.

Plants with a distinct stem containing woody and vascular tissue, growing from the apex only.

Spores of only one kind.
  Sporangia borne beneath peltate scales in a terminal spike. Stem leafless. EQUISETACEÆ, 621
  Sporangia borne on the back or margin of fronds circinate in vernation. FILICES, 622
  Sporangia borne in spikes or panicles. Fronds not circinate. OPHIOGLOSSACEÆ, 636
  Sporangia solitary in the axils of small leaves. LYCOPODIACEÆ, 638
Spores of two kinds, large or small.
  Sporangia solitary in the axils of small 4-ranked leaves. Stems branching. SELAGINELLACEÆ, 639
  Sporangia solitary in the dilated base of long clustered leaves. Stem corm-like. ISOETACEÆ, 640
  Sporangia enclosed in a peduncled sporocarp. Leaves 4-foliate. MARSILIACEÆ, 640
  Sporangia enclosed in a sessile sporocarp beneath branching floating stems. SALVINIACEÆ, 641

FLORA

OF THE

SOUTHERN UNITED STATES.

SERIES I.

PHÆNOGAMOUS OR FLOWERING PLANTS.

Vegetables furnished with flowers, consisting of stamens and pistils, and usually floral envelopes of some kind, and producing seeds which contain an embryo.

Class I. DICOTYLEDONOUS OR EXOGENOUS PLANTS.

Stem composed of bark and pith, which are separated by an interposed layer of woody fibre and vessels, and increasing in diameter, in all perennial stems, by the annual deposition of new layers between the wood and bark. Leaves reticulate-veined, commonly articulated with the stem. Floral envelopes usually in fours or fives. Cotyledons two, rarely more.

Subclass I. ANGIOSPERMÆ.

Ovules enclosed in an ovary, and fertilized by the action of the pollen through the medium of a stigma. Cotyledons two.

Division I. POLYPETALOUS EXOGENOUS PLANTS.

Floral envelopes double, consisting of both calyx and corolla; the latter of separate petals.

ORDER 1. RANUNCULACEÆ. (CROWFOOT FAMILY.)

Chiefly herbs, rarely shrubs or woody vines, with watery acrid juice. Leaves exstipulate, oftener divided. Flowers hypogynous, sometimes irregular. Sepals few or many, separate, often colored. Petals commonly as many as the sepals, and alternate with them, or wanting. Stamens mostly indefinite. Ovaries numerous and distinct, or few, or solitary, 1-celled, 1 – many-ovuled. Fruit dry or baccate. Seeds anatropous, with fleshy or horny albumen, and a minute embryo.

Synopsis of the Genera.

* Sepals valvate or with incurved margins in the bud. Fruit an achenium.

TRIBE I. **CLEMATIDEÆ.** Sepals colored. Petals none. Style persistent. — Chiefly vines, with opposite mostly ternately or pinnately divided leaves.

1. CLEMATIS. Flowers solitary or cymose, when vines climbing by the coiling tendril-form summit of the petiole.

* * Sepals imbricated in the bud. Fruit an achenium.

TRIBE II. **ANEMONEÆ.** Sepals colored. Petals none. — Perennial herbs. Leaves alternate or whorled, variously lobed or divided.

2. ANEMONE. Flowers solitary. Stem leaves whorled, forming an involucre under the flower. Achenia not ribbed nor inflated.
3. ANEMORELLA. Flowers umbelled. Stem leaves involucrate. Achenium ribbed.
4. THALICTRUM. Flowers corymbose or panicled. Leaves alternate. Achenium ribbed or inflated.
5. TRAUTVETTERIA. Flowers corymbose. Leaves alternate, lobed. Achenium 4-angled. Seed erect.

TRIBE III. **RANUNCULEÆ.** Sepals mostly herbaceous. Petals manifest. — Herbs. Leaves alternate. Flowers solitary or corymbose.

6. MYOSURUS. Sepals spurred at the base. Leaves radical. Scape 1-flowered.
7. RANUNCULUS. Sepals spurless. Petals yellow or white, with a pit or scale at the base. Stem leafy.
8. ADONIS. Petals red, not pitted at the base.

* * * Sepals imbricated in the bud. Fruit a follicle or berry.

TRIBE IV. **HELLEBORINEÆ.** Sepals colored. Petals mostly irregular, or none. Fruit a 1 – many-seeded follicle.

* Petals none.

9. CALTHA. Sepals yellow. Leaves entire.
10. ISOPYRUM. Sepals white. Leaves ternately divided.

* * Petals 2 – 10.

11. AQUILEGIA. Petals 5, alike, hollow, spurred. Leaves compoundly divided.
12. DELPHINIUM. Outer sepal hollow, spurred. Petals 4, unlike. Leaves lobed.
13. ACONITUM. Outer sepal large, hooded, enclosing the two stalked petals.
14. HELLEBORUS. Petals 8 – 10, small, tubular, 2-lipped. Sepals regular.
15. COPTIS. Petals 5 – 6, thickened and hooded at the apex. Scape 1-flowered.
16. ZANTHORHIZA. A shrub. Flowers regular, 5-petalled. Follicle 1–2-seeded.

TRIBE V. **CIMICIFUGEÆ.** Sepals colored. Petals small and flat, or none. Fruit a follicle or berry. — Leaves alternate.

17. HYDRASTIS. Petals none. Fruit baccate. — Stem 1-flowered.
18. ACTÆA. Petals entire. Racemes short. Fruit a berry.
19. CIMICIFUGA. Petals 2-cleft. Racemes long. Fruit a follicle.

1. CLEMATIS, L. VIRGIN'S BOWER.

Sepals 4, petal-like, valvate or with incurved margins in the bud, deciduous. Petals none. Stamens indefinite. Ovaries numerous, capitate, 1-ovuled, forming achenia in fruit, with the persistent styles in the form of long, mostly plumose tails. Seed suspended. — Perennial herbs or woody vines, with opposite entire or divided leaves, and single or cymose perfect or polygamous flowers.

§ 1. *Flowers solitary; outer stamens petal-like, sterile; buds scaly.* — ATRAGENE.

1. **C. verticillaris,** DC. Stem woody, climbing; leaves ternate, the stalked leaflets cordate-ovate; sepals ovate-lanceolate, spreading, bright purple, 1′–1½′ long; sterile stamens spatulate; tails of the achenia plumose. (Atragene Americana, *Sims.*) — Mountains of N. Carolina. April–May.

§ 2. *Sterile stamens none; buds not scaly.* — CLEMATIS.

* *Flowers solitary, perfect, nodding; sepals thick, valvate; stems herbaceous.*

+– *Stems erect, mostly simple.*

2. **C. ochroleuca,** Ait. Villous or silky-pubescent, rarely glabrous; stems rigid, 1° high; leaves ovate or roundish, entire, reticulate, glabrate above; flower yellowish, 1′ long; tails of the villous achenia plumose. (C. ovata, *Pursh,* the smooth form.) — Rocky woods in the upper districts. May–June.

3. **C. Baldwinii,** Torr. & Gray. Stems slender, 1°–1½° high, smoothish; leaves lanceolate or oblong, entire or three-lobed; peduncles 8′–10′ long; flower purple; tails of the achenia 2′–3′ long, plumose. — S. Florida.

+– +– *Stems climbing; leaves pinnately divided.*

4. **C. crispa,** L. (BLUE JESSAMINE.) Glabrescent; leaflets 3–9, thin, ovate or oblong, lobed or entire, acute, or (in var. Walteri, *Torr. & Gray*) lanceolate or linear; calyx 1′–2′ long, pale purple; sepals recurved or revolute and wavy-margined above the middle; tails of the achenia stout, pubescent. — Marshes and wet banks, middle and lower districts. May–June.

5. **C. Viorna,** L. (LEATHER-FLOWER.) Smoothish; leaflets 5–7, thin, oval or oblong-ovate, lobed or entire; calyx 1′ long, ovate, reddish brown; sepals tapering into a short recurved point; tails of the achenia plumose. — Woods and along rivers, rare in the lower districts. May–July.

6. **C. reticulata,** Walt. Smooth; leaflets 7–9, coriaceous, oval, mostly entire, strongly reticulated; calyx ovate, purple; sepals spreading at the point; tails of the achenia long and slender, plumose. — Dry sandy soil, chiefly in lower districts. May–July.

* * *Flowers cymose, polygamo-diœcious; sepals thin, spreading; stems woody, climbing; leaves ternately divided; tails of the achenia plumose.*

7. **C. Virginiana,** L. (VIRGIN'S BOWER.) Glabrate; leaves ternate, the oblong or cordate-ovate leaflets 2′–3′ long, lobed or toothed; cymes axillary, trichotomous, many-flowered; sepals oblong, ½′ long, white or yellowish. — River banks, chiefly in the upper districts. June–July.

8. **C. Catesbyana,** Pursh. Pubescent; leaves ternate, quinate, or biternate; leaflets ovate or cordate-ovate, usually 3-lobed; cymes few-flowered, mostly compound or panicled; sepals white, tomentose. — Dry sandy soil near the coast. August.

2. ANEMONE, L. WIND-FLOWER.

Sepals 4 – 30, colored, imbricated in the bud, deciduous. Petals none. Stamens indefinite, their filaments filiform. Ovaries mostly numerous. Ovule solitary. Achenia even (not ribbed), capitate, compressed, pointed by the short persistent style. Seed suspended. — Perennial herbs, with naked stems bearing at the summit 2 – 3 opposite or whorled leaves, which form an involucre at the base of the 1-flowered peduncle. Leaves lobed or divided.

* *Stem simple, 1-flowered.*

+ *Involucre close under the flowers, small, sessile, resembling a calyx; stems several, peduncle-like; leaves cordate, 3 – 5-lobed, persistent.*

1. **A. Hepatica,** L. (LIVER-LEAF.) Silky-villous; stems spreading, 4′ – 6′ long; leaves reniform-cordate, the lobes rounded; sepals 6–8, oblong, generally purple; achenia oval, longer than the curved styles. (Hepatica triloba, *Dill.*) — Dry rocky woods, chiefly in the upper districts. March.

2. **A. acutiloba,** Lawson. Leaves cordate, 3 – (rarely 5-) lobed, the lobes acute; sepals generally white; otherwise like the preceding. — Mountains of Georgia, and northward. March.

+ + *Involucre remote from the long-peduncled flower, lobed or divided.*

3. **A. nemorosa,** L. (WOOD ANEMONE.) Pubescent; stem 4′ – 8′ high from a slender scaly rootstock; radical leaves (wanting on flowering plants) ternately divided, the wedge-shaped divisions lobed and toothed, or the lateral ones deeply 2-parted (Var. quinquefolia), those of the involucre similar, longer than the petioles; sepals white, oval, or oblong, ½′ long; achenia few, oblong, pubescent, pointed by the short hooked persistent style. — Woodlands, mountains. March – April.

4. **A. triflora,** L.? Divisions of the involucre ovate-lanceolate, entire, finely serrate, acute, equalling or shorter than the petiole; achenia numerous. — Mountains of Georgia. March.

5. **A. Caroliniana,** Walt. Stem 3′ – 10′ high, from a globular stoloniferous tuber; radical leaves ternately divided into linear toothed divisions; involucre small, sessile, 3 – 5-lobed; peduncle long, pubescent; sepals 10 – 30, oblong-linear, white, the outer ones dotted with purple; achenia numerous in an oblong head, woolly. (A. heterophylla, *Nutt.*, with coarser leaves and greenish flowers.) — Dry woods, chiefly in the upper districts. March – April.

* * *Stem cymosely branched, bearing a 2-leaved involucel, and a single long-peduncled flower at each joint.*

6. **A. Virginiana,** L. (WIND-FLOWER.) Hirsute or villous, 2° – 3° high; radical leaves long-petioled, broadly cordate, twice 3-lobed, the divisions acutely lobed and toothed; involucres petioled, deeply 3-parted; sepals 5, greenish, the two outer ones lanceolate, acute, the inner obovate; achenia woolly, in an oblong head. — Dry woods in the upper districts. July – Aug.

3. ANEMONELLA, Spach. RUE-ANEMONE.

Habit and flowers of Anemone, with the foliage of Thalictrum. Flowers umbelled. Style none. Achenia few, smooth, oblong, strongly ribbed.

1. **A. thalictroides,** Spach. Glabrous, 6′ – 10′ high, from clustered tubers; leaves ternately compound; leaflets long-stalked, oval or roundish, cordate, shortly 3 – 5-lobed, of the involucre 6 – 9; umbel 3 – 6-flowered; sepals 6 – 10, oblong, white, 4″ – 6″ long. — Dry woods. April – May.

4. THALICTRUM, Tourn. MEADOW-RUE.

Sepals 4 – 5, imbricated in the bud, colored, deciduous. Petals none. Stamens numerous. Ovaries 3 – 15, 1-ovuled. Achenia furrowed or inflated, pointed by the persistent stigma or short style. Seed suspended. — Perennial mostly glabous branching herbs, with alternate ternately compound leaves, and mostly diœcious or polygamous small flowers.

* *Flowers diœcious or polygamous; sepals shorter than the stamens; style short; achenia ribbed.*

+ *Leaves 2 – 3-ternate, petioled; leaflets roundish, crenate, glaucous; anthers longer than the filaments; achenia oval or oblong; pedicels long, axillary; sepals greenish; flowers diœcious.*

1. **T. debile,** Buckley. Stem prostrate, 6′ – 12′ long, from clustered tubers; pedicels mostly in pairs; stamens 10 – 15; achenia 1 – 6, oblong. — Rocky woods, mountains of Georgia and Alabama. April – May.

2. **T. dioicum,** L. Stem erect, from a fibrous root; pedicels 2 – 6 in a cluster; stamens 20 – 30; achenia 4 – 10, oval, sessile, or rarely stipitate. (Var. stipitatum, *Torr. & Gray*). — Rocky woods, in the upper districts. March – April.

+ + *Lowest leaves petioled, decompound, the others sessile; leaflets very variable, entire or 3-lobed; anthers shorter than the filaments; achenia acute; flowers panicled.*

3. **T. purpurascens,** L. Stem 3° – 5° high, generally purplish; leaflets ovate or oblong, often cordate, strongly veined, 3-lobed or entire, mostly pubescent beneath; flowers diœcious, greenish or purplish; filaments long and drooping, slightly thickened upwards; anthers linear, mucronate. — Dry soil in the upper districts. July – August.

4. **T. polygamum,** Muhl. Like the last, but taller; leaflets less strongly veined and thinner; flowers polygamous, white; filaments plainly thickened under the short oblong obtuse anthers. — Swamps and wet banks. July – August.

* * *Flowers perfect; stigma sessile; achenia stipitate, inflated, veiny; flowers panicled; leaves petioled, biternate.*

5. **T. clavatum,** DC. Stem 1° – 2° high, sparingly branched; leaflets thin, obovate or rounded, 3 lobed; panicle corymbose; flowers white; achenia 5 – 10, scimitar-shaped, short-pointed. (T. nudicaule, *Schweinitz.*) — Mountains of N. Carolina. July.

5. TRAUTVETTERIA, Fisch. & Mey.

Sepals 3 – 5, orbicular, imbricated in the bud, caducous. Petals none. Stamens indefinite. Ovaries numerous, 1-ovuled. Achenia capitate, 4-angled, beaked by the hooked persistent style. Seed erect. — Perennial herbs, with alternate palmately lobed leaves, and corymbose white flowers.

1. **T. palmata,** Fisch. & Mey. Stem 2° – 4° high; leaves divided into 5 – 9 serrate and toothed lobes, the lowest 4 – 6′ wide, long-petioled. — Mountains, also dry pine woods, W. Florida.

6. MYOSURUS, L. MOUSE-TAIL.

Sepals 5 – 7, imbricated, spurred at the base. Petals 5 – 7, linear-spatulate. Stamens 5 – 20 Ovaries numerous, 1-ovuled. Achenia 3-angled, imbricated on the spike-like receptacle. Seed suspended. Small annuals, with linear radical leaves, and a small yellowish flower on a naked scape.

1. **M. minimus,** L. Scape 2′ – 6′ long, longer than the leaves; achenia beakless. — Augusta, Georgia; Nashville, Tennessee.

7. RANUNCULUS, L. CROWFOOT, BUTTERCUP.

Sepals 3–5, regular, herbaceous, imbricated in the bud, deciduous. Petals 3 – 10, with a pit or scale at the narrowed base. Stamens mostly numerous. Ovaries few or numerous, 1-ovuled. Achenia capitate, compressed, mostly beaked by the short persistent style. Seed erect. — Herbs. Leaves alternate, the lowest petioled. Flowers axillary or corymbose, white or yellow.

§ 1. *Petals with a pit at the base, white; achenia rugose.*

1. **R. aquatilis,** L. var. **trichophyllus,** Gray. Aquatic, filiform, immersed; leaves petioled, divided into very numerous capillary segments; peduncles opposite the leaves. — Slow-flowing streams in the upper districts, *Pursh.* June – August.

§ 2. *Petals yellow, with a small scale at the base.*

* *Achenia muricate; annuals.* (*Introduced.*)

2. **R. parviflorus,** L. Softly villous, much branched, ½° – 1° high: lower leaves round-cordate, 3-lobed, toothed, the upper 3-parted or entire; flowers small; petals 3 – 5, as long as the sepals; styles recurved. — Roadsides and waste ground. April – May.

3. **R. muricatus,** L. Nearly glabrous; stem 1° – 1½° high; petals 5, longer than the sepals; styles straight; achenia strongly margined; otherwise like the preceding. — Waste ground, Charleston (*Elliott*). April – May.

* * *Achenia smooth; chiefly perennials.*

+– *Leaves undivided, denticulate or entire, lanceolate, the lower broader and petioled; flowers small.*

4. **R. ambigens,** Watson. Stem 1° – 2° long, ascending, rooting at the lower joints; flowers 3″ – 5″ wide, the petals longer than the calyx; achenia tumid, slender-beaked. (R. alismæfolius, *Gray.*) — Wet banks, chiefly in the upper districts. — Leaves 2′ – 4′ long.

5. **R. pusillus,** Poir. Stems several, erect, 6′ – 12′ high; lowest leaves ovate or rounded; flowers 2″ wide, the 1 – 5 petals as long as the calyx; achenia obovate, minutely pointed. — Miry banks in the upper districts. April – May. — Leaves 1′ long. — Stamens 5 – 9.

6. **R. oblongifolius,** Ell. Stem 1° – 2° high; lower leaves oblong; flowers 3″ – 5″ wide; petals longer than the calyx; stamens numerous; achenia globular, pointless. — Ditches and wet places in the lower districts. May – July. Rare.

+ + *Leaves (excepting No. 7) ternately lobed or divided, the lowest petioled.*

++ *Petals small, not exceeding the calyx.*

7. **R. abortivus,** L. Biennial, glabrous, 1° – 1½° high; lowest leaves broadly cordate, crenate, rarely 3-parted; stem leaves 3 – 5-parted, the lanceolate lobes toothed or entire; achenia in globose heads, very short-pointed. — Low grounds. April – May.

8. **R. sceleratus,** L. Annual, glabrous, ½° – 1½° high; lower leaves round-cordate, 3-lobed, obtusely toothed, the upper 3-parted; achenia in an oblong or cylindrical head, pointless. — Ditches, etc., Charleston (*Elliott*). Introduced. April – May.

9. **R. recurvatus,** Poir. Hirsute, 1° – 2° high; leaves all petioled, cordate, 3 – 5-lobed or parted, the broad divisions mucronate-toothed or serrate; achenia in a globose head, pointed with a long and slender recurved beak. — Low grounds. June – July.

10. **R. Pennsylvanicus,** L. Hirsute, 1° – 2° high; leaves ternate, the leaflets stalked, 3-parted, narrowly lobed and toothed; achenia in an oblong head, pointed with a broad straight beak. — Damp grounds, N. Carolina (*Curtis*). May – June.

++ ++ *Petals much larger than the calyx; achenia in a globose head, compressed, the margins thickened.*

11. **R. multifidus,** Pursh. Stem long, floating; immersed leaves as in No. 1, the floating ones palmately much divided; achenia pointed with a short straight beak. — In shallow ponds, N. Carolina (*Curtis*).

12. **R. septentrionalis,** Poir. Stem erect or spreading, 1° high, hirsute; leaves ternate or 3-parted, the divisions mostly stalked, 3-lobed; achenia broadly straight-beaked. (R. repens, 1st edition.) — Low or wet ground, in the upper districts. April – May. — Stem sometimes stoloniferous.

Var. **Marilandicus.** Densely hirsute with spreading hairs; leaves mostly ternate, the leaflets ovate or cuneate, 3-lobed. — Dry shaded soil in the middle and upper districts.

Var. **nitidus.** Smooth, prostrate, 1° – 2° long; leaves trifoliolate; beak of the achenium slightly curved. — River swamps in the lower districts. Early spring.

13. **R. fascicularis,** Muhl. Silky pubescent; stem ½° – 1° high from a cluster of fleshy fibres; leaves ternately or somewhat pinnately divided; flowers large; achenia long-beaked. — Rocky woods, N. Carolina and Tennessee. March – April.

14. **R. bulbosus,** L. Stem erect from a solid bulb; leaves pinnately divided; flowers large (1′ wide); achenia pointed with a short curved beak. — N. Carolina. Introduced.

15. **R. acris,** L., and of the 1st edition, is probably not permanently established within my limits.

8. ADONIS, L. Pheasant's Eye.

Differs from the preceding mainly in the absence of a pit or scale at the base of the petals, the spike-like arrangement of the achenia, and in the pinnate division of the leaves.

1. **A. autumnalis,** L. Annual; leaves finely dissected; petals 6 – 8, crimson. — New Orleans. Introduced.

9. CALTHA, L. Marsh Marigold.

Sepals 4 – 10, regular, colored, imbricated in the bud, deciduous. Petals none. Stamens numerous. Ovaries 5 – 15, forming many-seeded follicles in fruit. Stigma sessile. — Perennial smooth herbs, with cordate or reniform undivided leaves, and showy yellow flowers.

1. **C. palustris,** L. Stem furrowed, simple or branched, 6′ – 10′ high; leaves long-petioled, or the upper sessile, entire, crenate, or sharply denticulate, 2′ – 6′ wide; flowers single or corymbose, long-peduncled; follicles spreading. — Marshes, N. Carolina (*Hyams*), Tennessee (*Gattinger*).

10. ISOPYRUM, L.

Sepals 5 – 6, regular, colored, deciduous. Petals none, or 5 and minute. Stamens numerous. Ovaries 2 – 20. Ovules few or many, in 1 – 2 rows. Style short, subulate. Follicles sessile. Seed horizontal. — Low and tender perennial herbs, with alternate ternately divided leaves, and solitary white flowers.

1. **I. biternatum,** Torr. & Gray. Stem 6′ – 12′ high, from fibrous tuber-bearing roots; radical leaves biternate, long-petioled; stem leaves ternate, nearly sessile; leaflets ovate and obovate, obtusely 3-lobed; petals none; follicles 1 – 5, 2-seeded. — Shaded cliffs of the Chipola River, W. Florida, Alabama (*E. A. Smith*). March – April.

11. AQUILEGIA, L. Columbine.

Sepals 5, regular, colored, deciduous. Petals 5, prolonged downward into hollow spurs. Filaments long, filiform. Follicles 5, connivent, many-seeded, tipped with the long filiform persistent styles. — Erect branching herbs, with alternate 2 – 3-ternate leaves, and showy nodding solitary flowers.

1. **A. Canadensis,** L. Stem 1° – 3° high, smooth or slightly pubescent; radical leaves biternate, the leaflets roundish, crenately lobed; flowers scarlet stamens and styles exserted. — Rocky woods, chiefly in the upper districts April – May.

12. DELPHINIUM, L. LARKSPUR.

Sepals 5, irregular, colored, the upper one prolonged backward into a hollow spur. Petals 4, and separate, or 2 and united, the 2 upper with spurs which are received in the spur of the sepal. Ovaries 1 – 5. Follicles many-seeded. — Erect herbs, with alternate palmately divided leaves, and showy flowers in terminal racemes.

∗ *Petals* 4; *follicles* 3. *Perennial.*

1. **D. exaltatum,** Ait. Stem 2° – 4° high, branching and hairy above; leaves 4′ – 6′ wide, the divisions lanceolate or oblong; racemes many-flowered; flowers blue; spur straight, rather longer than the calyx; follicles erect. — Mountains of Alabama to N. Carolina. June – August.

2. **D. azureum,** Michx. Stem mostly simple, downy, 1° – 2° high; leaves 2′ – 3′ wide, the divisions linear; racemes many-flowered; flowers blue; spur curved, twice as long as the calyx; follicles erect. — Light soil in the middle and upper districts. May – June.

3. **D. tricorne,** Michx. Stem smoothish, 1° – 1½° high from small clustered tubers; leaves 2′ – 3′ wide, with oblong-linear divisions; racemes many-flowered, the pedicels shorter than the deep-blue flowers; spur straight, equalling the calyx; follicles arcuate-spreading. — Mountains of Georgia and Tennessee. April – May.

4. **D. virescens,** Nutt.? Stem downy, slender, 6′ – 10′ high; leaves 1′ wide; racemes 3 – 6-flowered, the pedicels longer than the yellowish white flowers; spur longer than the calyx, curved at the summit; follicles arcuate-spreading. — Valley of the Coosa River, Georgia. May – June.

∗ ∗ *Petals 2, and united; follicles single. Annual.*

5. **D. consolida,** L. Smooth; divisions of the leaves narrow-linear; flowers white or various shades of blue or purple; follicle glabrous. — Grain-fields and around homesteads. Introduced.

13. ACONITUM, L. MONKSHOOD, WOLFSBANE.

Sepals 5, irregular, colored, the uppermost large, helmet-shaped, the 2 lateral large and rounded, the lower oblong. Petals 2 or 5, the 2 upper long-stalked, produced backward into a short spur, the three lower minute or wanting. Stamens numerous. Ovaries 2 – 5. Follicles many-seeded. Seed rugose. — Perennial herbs, with alternate palmately dissected leaves, and racemose showy flowers.

1. **A. uncinatum,** L. Stem slender, 2° – 6° long; leaves 3 – 5-cleft, the ovate-lanceolate lobes coarsely toothed; raceme few-flowered; sepals blue, the upper helmet-shaped. — Mountains of N. Carolina. June – August.

2. **A. reclinatum,** Gray. Stem reclining, 4° – 8° long; leaves deeply 3 – 7-cleft, the cuneate lobes acutely toothed; racemes few – many-flowered; sepals white, the upper long-conical. — Mountains of N. Carolina. July – August.

14. HELLEBORUS, L. HELLEBORE.

Sepals 5, rounded, persistent. Petals 8 – 10, very small, tubular, 2-lipped. Stamens numerous. Follicles 3 – 10, coriaceous, many-seeded. — Perennial herbs, with palmate or pedate leaves, and solitary nodding flowers.

1. **H. viridis,** L. Stem 1° – 2° high; lowest leaves pedate, long-petioled, the upper palmate and nearly sessile, the divisions lanceolate; sepals oval, green; follicles oblong. — N. Carolina (*Hyams*). Introduced.

15. COPTIS, Salisb. GOLD-THREAD.

Sepals 5 – 6, colored, regular, deciduous. Petals 5 – 6, thickened and hooded at the apex. Stamens numerous. Follicles 3 – 10, long-stipitate (as if umbellate), pointed with the hooked style, few-seeded. — Perennial smooth herbs, with ternately divided leaves, and 1 – 4 small flowers at the summit of a naked scape.

1. **C. trifolia,** Salisb. Scape 4′ – 6′ high, from a slender yellow rootstock, 1-flowered; leaves persistent, trifoliolate, long-petioled, the leaflets obovate and slightly lobed; flowers white. — Mountains of E. Tennessee (*Gattinger*). June.

16. ZANTHORHIZA, Marshall. YELLOW ROOT.

Sepals 5, regular, colored, deciduous. Petals 5, small, gland-like, 2-lobed. Stamens 5 – 10. Ovaries 5 – 10, 2-ovuled. Style subulate, incurved, at length dorsal. Follicles sessile. Seed solitary, suspended. — A smooth slender shrub, 2° – 3° high, with yellow roots. Leaves pinnate, long-petioled, the 3 – 5 ovate leaflets lobed and toothed. Flowers in slender compound racemes, appearing before the leaves, dark purple.

1. **Z. apiifolia,** L'Herit. — Shady banks, chiefly in the upper districts. March – April.

17. HYDRASTIS, L. GOLDEN SEAL.

Sepals 3, ovate, colored, caducous. Petals none. Stamens numerous. Ovaries 12 – 20, fleshy, 2-ovuled, ripening into a head of 1 – 2-seeded crimson berries. — Stem 1° high, from a thick knotted rootstock, 2-leaved, 1-flowered; leaves palmately 5 – 7-lobed, toothed and serrate, the lower petioled, the upper sessile under the short-stalked greenish white flower.

1. **H. Canadensis,** L. — Rich open woods. Mountains of Georgia, and northward. May.

18. ACTÆA, L. BANEBERRY.

Sepals 3 – 5, ovate, colored, caducous. Petals 4 – 10, entire. Stamens numerous. Ovary solitary, 1-celled, ripening into a many-seeded berry. — Perennial herbs. Stem simple, bearing one or two large 2 – 3-ternately compound leaves, and a single oval or oblong raceme of small white flowers.

1. **A. alba,** Bigel. (WHITE COHOSH.) Smooth or nearly so, 2° high; leaves mostly 2, long-petioled, the ovate leaflets acutely toothed; raceme long-peduncled, the pedicels in fruit thick and red; berry white — Rocky woods. Mountains of Georgia, and northward. May.

2. **A. spicata,** L., var. **rubra,** Ait. (Red Cohosh.) Like the preceding, but the pedicels not thickened in fruit, and the berries cherry-red. — Tennessee. May.

19. CIMICIFUGA, L. Bugbane.

Sepals 4 – 5, ovate, colored, caducous. Petals 1 – 8, 2-lobed. Stamens very numerous, the filiform filaments elongated. Ovaries 1 – 8, 1-celled, ripening into many-seeded follicles. — Tall perennial herbs, with large ternately compound leaves, and long slender racemes of white flowers.

* *Ovary mostly single; stigma large, depressed; seeds horizontal, smooth.*

1. **C. racemosa,** Ell. (Black Snakeroot.) Stem 4° – 8° high; leaves 3-ternate, the ovate or ovate-lanceolate leaflets sharply toothed and serrate; racemes 6′ – 12′ long, mostly branched, downy; follicles ovate, sessile on the pedicel. — Rich shady woods in the upper districts.

* * *Ovaries 3 – 8; stigma minute; seeds vertical, chaffy.*

2. **C. Americana,** Michx. Stem 3° – 4° high; leaves 3-ternate; leaflets ovate, sharply toothed and serrate, the terminal one 3-lobed; racemes somewhat panicled; follicles 3 – 5, compressed, obovate-oblong, short-stipitate. — Mountains of N. Carolina. June – July.

3. **C. cordifolia,** Pursh. Stem 2° – 3° high; leaves 2-ternate, ovate or cordate-ovate, 2 – 3-lobed, toothed and serrate; racemes long, panicled; follicles 2 – 3, oblong, sessile. — High mountains of N. Carolina. Rare. June – July.

Order 2. MAGNOLIACEÆ. (Magnolia Family.)

Aromatic trees or shrubs, with simple alternate leaves, and regular hypogynous flowers. — Sepals and petals mostly alike, imbricated in three or more rows in the bud. Stamens distinct or united. Anthers adnate. Ovaries numerous, imbricated or whorled, 1 – 2-ovuled. Fruit fleshy, baccate, or samara-like, distinct, or in cone-like heads. Seed dry or baccate. Embryo minute at the base of fleshy albumen.

Synopsis.

Suborder I. **WINTEREÆ.** Flowers perfect. Stamens numerous, separate. Ovaries in a single whorl, 1-ovuled, becoming coriaceous follicles in fruit. — Erect shrubs. Leaves entire. Stipules none.

1. ILLICIUM. Leaves evergreen. Flowers nodding.

Suborder II. **SCHIZANDREÆ.** Flowers monœcious. Stamens united. Ovaries imbricated in a head, 2-ovuled, becoming scattered berries in fruit. — Climbing shrubs. Leaves deciduous, often toothed. Stipules none.

2. SCHIZANDRA. Stamens 5, united into a 5-lobed disk.

Suborder III. **MAGNOLIEÆ.** Flowers perfect. Stamens numerous, separate. Ovaries imbricated in a head, 2-ovuled. Fruit fleshy or somewhat woody, in cone-like heads or spikes. — Chiefly trees. Leaves entire. Stipules large.

3. MAGNOLIA. Fruit fleshy, dehiscent, persistent on the receptacle. Anthers introrse.
4. LIRIODENDRON. Fruit woody, indehiscent, samara-like, deciduous. Anthers extrorse.

1. ILLICIUM, L. ANISE-TREE.

Flowers perfect. Sepals 3 or 6. Petals 9 – 30, spreading. Stamens numerous. Anthers introrse. Follicles 6 or more, in a single whorl, coriaceous, at length 2 valved, 1-seeded. Seed ascending. — Smooth anise-scented shrubs, with entire exstipulate evergreen leaves. Peduncles from terminal buds, 1-flowered, nodding.

1. **I. Floridanum,** Ellis. Shrub 6° – 10° high; leaves oblong-lanceolate, acuminate; petals 20 – 30, linear, widely spreading, dark purple. — Sandy swamps, Florida to Mississippi. April.

2. **I. parviflorum,** Michx. Leaves lanceolate, acute; petals 6 – 12, ovate or roundish, concave, yellow. — Coast of Georgia and E. Florida.

2. SCHIZANDRA, Michx.

Flowers monœcious. Sepals 5 – 6, ovate. Petals 5 – 6, oblong. Stamens 5, their short filaments united, forming a circular 5-lobed disk, with the anther-cells widely separated. Ovaries numerous, imbricated, ripening into 1 – 2-seeded berries which are scattered on the greatly elongated filiform receptacle. — A woody climbing vine, with ovate membranaceous deciduous leaves, and small long-peduncled crimson flowers from axillary buds. Stipules none.

1. **S. coccinea,** Michx. — Low shaded ground in the lower districts. May – June.

3. MAGNOLIA, L. CUCUMBER-TREE.

Flowers perfect. Sepals 3, caducous. Petals 6 – 9, deciduous. Stamens indefinite. Ovaries numerous, imbricated, ripening into a cone-like head of 2-seeded persistent follicles opening on the back. Seeds fleshy, suspended by a slender cord. — Trees or shrubs. Stipules adnate to the leaf-stalks. Flowers large, solitary, terminal, odorous.

* *Leaves perennial.*

1. **M. grandiflora,** L. (MAGNOLIA.) Leaves oblong or obovate, smooth above, rusty-pubescent beneath, 6′ – 12′ long; flowers 6′ – 9′ wide, the petals white, obovate, concave; cone of fruit oval, 3′ – 4′ long. — Light fertile soil in the lower districts. May. — A large tree.

2. **M. glauca,** L. (SWEET BAY.) Leaves 4′ – 6′ long, oblong or lanceolate, silky-pubescent glabrate above, glaucous beneath; flowers 1′ – 2′ wide, white and fragrant, the petals obovate, concave; cone of fruit 1′ – 1½′ long. — Swamps. April – May. — A shrub or small tree.

* * *Leaves deciduous, acute at the base.*

3. **M. Umbrella,** Lam. Leaves 1° – 1½° long, obovate oblong, clustered at the summit of the branches, glabrate; flowers 4′ – 6′ wide, the white petals oblong-lanceolate, acute; cone of fruit oblong, 4′ – 6′ long. — Upper districts. June. — A small tree.

4. **M. acuminata,** L. Leaves 6′ – 9′ long, oval, acuminate, downy beneath; flowers 3′ – 4′ wide, the yellow petals oblong, obtuse; cone of fruit cylindrical, 2′ – 3′ long. — Upper districts. May. — A large tree.

* * * *Leaves deciduous, auriculate or cordate at the base.*

5. **M. cordata,** Michx. Leaves oval or roundish, 4′–5′ wide, white-downy beneath; flowers 3′–4′ wide, the yellow petals oblong, acute; cone of fruit oblong, 3′ long. — Western parts of S. Carolina (*Michaux*), and Columbia County, Georgia, very rare.

6. **M. Fraseri,** Walt. Leaves spatulate-obovate, glabrous, 8′–12′ long, auriculate-cordate at the base; flowers 3′–4′ wide, the oblong obtuse petals white; cone of fruit ovate. — Mountains, and a small-leaved form in the lower districts. June–July. — Mostly a small tree.

7. **M. macrophylla,** Michx. Leaves 1°–2° long, oblong-obovate, cordate, glaucous beneath; flowers 8′–10′ wide, white, the petals oblong, obtuse; cone of fruit 4′ long, oval. — Middle and upper districts, local. April. — A small tree.

4. LIRIODENDRON, L. WHITE POPLAR.

Flowers perfect. Sepals 3, reflexed. Petals 6, erect. Stamens indefinite. Ovaries numerous, imbricated, 1-celled, forming in fruit a cone-like head of indehiscent 1–2-seeded deciduous carpels. — A large tree. Leaves lobed. Stipules free. Flowers terminal.

1. **L. Tulipifera,** L. (TULIP-TREE.) Leaves smooth, rounded at the base, 3-lobed, the middle lobe truncated; flowers bell-shaped, the petals greenish yellow striped with orange. — Low grounds. May.

ORDER 3. ANONACEÆ. (CUSTARD-APPLE FAMILY.)

Trees or shrubs, with simple entire alternate leaves, and solitary axillary perfect hypogynous flowers. — Sepals 3. Petals 6, in two rows, valvate, deciduous. Stamens numerous. Anthers adnate. Ovaries few or many, baccate in fruit. Seeds large, anatropous. Embryo minute, at the base of ruminated albumen.

1. ASIMINA, Adans. CUSTARD-APPLE.

Petals thick, the 3 outer ones larger and spreading. Ovaries 3–15, 1-celled, few–many-ovuled, pulpy or fleshy in fruit. Seeds horizontal, enclosed in a thin, succulent aril. — Shrubs or small trees, with deciduous exstipulate leaves and nodding flowers.

* *Flowers appearing with or before the leaves.*

1. **A. triloba,** Dunal. (PAPAW.) Leaves 4′–8′ long, obovate-oblong, acuminate, rusty-pubescent, like the branches, at length glabrous; flowers 1′ wide; outer petals round-ovate, purplish brown, 3–4 times longer than the calyx; fruit oblong, many-seeded, edible. — Low ground, chiefly in the upper districts. March. — A shrub or small tree.

2. **A. parviflora,** Dunal. Shrub 2°–5° high. Leaves 4′–6′ long, obovate-oblong, acute, glabrate; flowers ½′ wide, the oblong-ovate outer petals

twice as long as the calyx, purplish brown; fruit oblong or pear-shaped, few-seeded. — Dry sandy soil in the lower districts. March.

3. **A. grandiflora,** Dunal. Shrub 2° – 3° high; leaves obovate, obtuse, rigid, 2′ – 3′ long, densely pubescent, like the branches, when young, at length smooth above; outer petals 2′ long, round-obovate, yellowish, many times longer than the calyx; fruit small, 1 – few-seeded. — Dry sandy soil in the lower districts of Georgia and E. Florida. March – April.

* * *Flowers from the axils of coriaceous leaves.*

4. **A. pygmæa,** Dunal. Glabrous; shrub 2° – 3° high; leaves 2′ – 6′ long, cuneate-oblong to linear, early deciduous; flowers 1′ – 3′ wide, white or pale yellow, the outer petals oblong-obovate; fruit cylindrical, few-seeded. (A. angustifolia, *Gray*?) — Sandy pine barrens, Florida, and lower districts of Georgia. May. — On young stems the leaves are broader and the flowers larger.

5. **A. cuneata,** Shuttl. Leaves lanceolate-oblong, pubescent beneath, 3′ – 4′ long; flowers 1′ wide, the outer petals oblong, three times longer than the calyx, and twice as long as the inner ones. — S. Florida (*Feay*).

2. ANONA, L. CUSTARD-APPLE.

Differs from the preceding in its numerous ovaries, with a single erect ovule, forming in fruit a compound many-seeded pulpy berry. — Tropical trees or shrubs.

1. **A. laurifolia,** Dunal. Glabrous; leaves oblong-ovate, 3′ – 4′ long; flowers 1′ wide, whitish; petals thick, the outer ones round-ovate; fruit smooth; seeds compressed. — Wet banks, S. Florida. — A small tree.

ORDER 4. MENISPERMACEÆ. (MOONSEED FAMILY.)

Climbing woody vines, with alternate exstipulate palmately veined leaves, and small polygamous or diœcious flowers, in axillary or supra-axillary racemes or panicles. — Sepals and petals mostly alike, in two or more rows, imbricated in the bud. Stamens 6 or more, hypogynous. Anthers 2- or 4-celled. Ovaries 3 – 8, drupaceous in fruit. Seed and embryo curved, the latter large, in thin albumen.

1. COCCULUS, DC.

Flowers diœcious or polygamous. Sepals and petals 6, each in two rows. Stamens 6, the anthers 4-celled. Ovaries 3 – 6, 1-celled, 1-ovuled. Stigma subulate. Drupe baccate. Nut uniform, rugose. Seed conformed to the cavity of the nut. Embryo semicircular.

1. **C. Carolinus,** DC. Pubescent; leaves petioled, ovate or cordate, entire or 3 – 5-lobed, acute or obtuse; racemes of the fertile flowers simple, of the sterile compound; flowers white; drupe red. — Woods and thickets June – July

2. MENISPERMUM, L. Moonseed.

Flowers diœcious. Sepals and petals 4 – 8. Stamens 12 – 24. Anthers 4-celled. Ovaries 2 – 4. Stigma dilated, spreading. Otherwise like the preceding.

1. **M. Canadense,** L. Glabrous; leaves long-petioled, round-cordate, entire, angular, or lobed, slightly peltate at the base, glaucous beneath; panicles supra-axillary, single or in pairs, drooping; flowers small, white. — River banks, chiefly in the upper districts. July.

3. CALYCOCARPUM, Nutt.

Flowers diœcious. Sepals 6. Petals none. Stamens 12. Anthers 2-celled. Ovaries 3, 1-ovuled. Stigma radiate, many-cleft. Drupe oval. Nut excavated on the inner face. Embryo curved, foliaceous.

1. **C. Lyoni,** Nutt. — River banks in the upper districts. May – June. Pubescent; leaves round-cordate, 3 – 7-lobed, acuminate; racemes compound, supra-axillary; flowers white; drupe globose.

Order 5. BERBERIDACEÆ. (Barberry Family.)

Herbs or shrubs, with alternate mostly divided leaves, and perfect regular hypogynous flowers. — Sepals and petals in two or more rows of 2 – 4 each, imbricated in the bud, deciduous. Stamens opposite the petals. Anthers 2-celled, opening by uplifted valves (or lengthwise in *Podophyllum*). Fruit baccate or capsular. Embryo in the axis of fleshy or horny albumen.

Synopsis.

* Anthers opening by uplifted valves.

1. BERBERIS. Stamens 6. Leaves bristly-serrate. Shrubs.
2. CAULOPHYLLUM. Stamens 6. Leaves compound. Herb.
3. DIPHYLLEIA. Stamens 6. Leaves peltate, deeply 2-cleft and lobed. Herb.
4. JEFFERSONIA. Stamens 8. Scape 1-flowered. Leaves 2-parted. Herb.

* * Anthers opening longitudinally.

5. PODOPHYLLUM. Stamens 12 or more. Flower solitary in the fork of the two peltate lobed leaves.

1. BERBERIS, L. Barberry.

Sepals 6, orbicular. Petals 6, obovate, often biglandular near the base. Stamens 6, irritable. Stigma circular, depressed. Fruit a 1 – 9-seeded berry. Seeds erect. — Shrubs with yellow wood. Leaves bristly serrate, often reduced to branching spines. Flowers racemose, yellow. Berries acid.

1. **B. Canadensis,** Pursh. Shrub smooth, spiny, 2° – 3° high; leaves obovate, bristly-serrate; racemes 6 – 8-flowered; petals notched; berries oval, red. — Mountains of N. Carolina.

2. CAULOPHYLLUM, Michx. Blue Cohosh.

Sepals 6, ovate-oblong. Petals 6, thick and gland-like, shorter than the sepals. Stamens 6. Style short, stigmatic within. Ovary thin, early ruptured by the two growing ovules. Seeds globose, drupe-like, stalked. Albumen horny. A smooth perennial herb, with large ternately compound leaves, and small yellowish green flowers in a terminal raceme or panicle.

1. **C. thalictroides**, Michx. (PAPPOOSE-ROOT.) Rich valleys in the upper districts. May. — Stem 1° – 2° high, glaucous. Radical leaf 3-ternate, long-petioled; stem leaves (mostly two) sessile, the upper 2-ternate. Leaflets ovate or obovate, 2 – 3-lobed. Panicle few-flowered. Seed glaucous.

3. DIPHYLLEIA, Michx.

Sepals 6, caducous. Petals 6, oval, flat. Stamens 6. Stigma circular, depressed. Fruit baccate, 2 – 3-seeded. Seeds erect. — A smooth perennial herb, with two large alternate peltate 2-parted lobed leaves, and a terminal long-peduncled cyme of white flowers.

1. **D. cymosa,** Michx. — Margins of streams, mountains of N. Carolina. May – June. — Stem 1° – 2° high. Leaves 1° or more wide, the divisions 5 – 7-lobed. Berries blue.

4. JEFFERSONIA, Barton. TWIN-LEAF.

Sepals 4, petal-like, caducous. Petals 8, oblong. Stamens 8. Stigma nearly sessile, 2-lobed. Capsule coriaceous, obovate, many-seeded, opening transversely on the back, near the summit. Seeds numerous, furnished with a fleshy laciniated aril. — A low stemless perennial herb, with long-petioled, 2-parted leaves, and a naked scape bearing a single white flower.

1. **J. diphylla,** Pers. — Rich shady woods, Tennessee. May. — Divisions of the leaves half-ovate, toothed or entire. Scape 6′ – 12′ high. Flowers 1′ wide.

5. PODOPHYLLUM, L. MAY-APPLE.

Sepals 6, caducous. Petals 6 – 9, obovate. Stamens twice as many (in our species) as the petals. Anthers opening longitudinally. Stigma large, peltate, sessile. Fruit baccate, many-seeded. Seeds enveloped in a pulpy aril. — Low perennial herbs, with the naked stem terminated by two large peltate 5 – 9-parted lobed and toothed leaves, with a solitary nodding flower in the fork.

1. **P. peltatum**, L. (MANDRAKE.) Glabrous, 1° high, from creeping rootstocks; leaves of the flowering stem laterally peltate, 4′ – 6′ wide, of the barren ones single and centrally peltate; flower greenish, 1′ wide; berry 1′ – 2′ long, ovate, fragrant. — Low rich woods. April – May.

ORDER 6. NYMPHÆACEÆ. (WATER-LILY FAMILY.)

Perennial aquatic herbs, with peltate or cordate floating leaves and flowers. — Sepals 3 – 6, colored within. Petals and stamens few or indefinite. Carpels indehiscent, distinct and few-seeded, or united, forming a several-celled many-seeded berry. Embryo enclosed in a sac outside the albumen, when present. The Order also includes, as Suborders, the Cabombaceæ and Nelumbiaceæ of the first edition.

Synopsis.

SUBORDER I. **CABOMBEÆ.** Caulescent, leafy. Flowers axillary, hypogynous. Sepals and petals 3 - 4. Stamens 6 - 18. Ovaries 2-18. Ovules suspended from the dorsal suture. Carpels distinct, 1 - 3-seeded. Embryo at the base of fleshy albumen.

1. CABOMBA. Stamens 6. Submerged leaves finely dissected.
2. BRASENIA. Stamens 12 - 18. Leaves entire, peltate, floating.

SUBORDER 2. **NELUMBONEÆ.** Stemless. Leaves floating. Flowers hypogynous. Sepals and petals alike, deciduous. Stamens indefinite, the filaments prolonged above the anthers. Ovaries 1-celled, 1-ovuled, embedded in the flat summit of the large obconical receptacle. Seed suspended. Embryo large. Albumen none.

3. NELUMBIUM. Characters of the Suborder.

SUBORDER 3. **NYMPHÆACEÆ.** Stemless. Leaves floating, cordate. Flowers solitary. Sepals 3 - 6. Petals numerous. Stamens indefinite. Ovary many-celled, the numerous ovules inserted on the partitions. Fruit indehiscent, baccate. Seed albuminous.

4. NYMPHÆA. Petals perigynous. Stigma radiate.
5. NUPHAR. Petals hypogynous. Stigma peltate.

1. CABOMBA, Aublet.

Sepals and petals 3. Stamens 6. Ovaries 2 - 4. Carpels 1 - 3-seeded. — Stems filiform, branching. Submerged leaves opposite, finely dissected, the floating peltate, entire. Flowers small in the axils of the floating leaves.

1. **C. Caroliniana,** Gray. Floating leaves small, linear-oblong; flowers long-peduncled, white. — Ponds and still water in the lower districts. July.

2. BRASENIA, Schreber. WATER-SHIELD.

Sepals and petals, 3 - 4. Stamens 12 - 18. Ovaries 4 - 18. Carpels 1 - 2-seeded. — Leaves alternate, peltate, entire. Flowers axillary, small.

1. **B. peltata,** Pursh. Stem, petioles, and lower surface of the leaves coated with a gelatinous exudation; leaves 2′ - 3′ wide; flowers dull purple. — Still water. July.

3. NELUMBIUM, Juss. WATER-CHINQUEPIN.

Characters of the Suborder.

1. **N. luteum,** Willd. Rhizoma thick, creeping; leaves 1° - 1½° wide, centrally peltate, depressed in the centre, the petioles, like the peduncles, more or less muricate; flowers 5′ - 8′ wide, pale yellow; appendage of the anther linear. — Ponds and still water, chiefly in the lower districts. July.

4. NYMPHÆA, Tourn. WATER-LILY.

Sepals 4. Petals inserted on the ovary. Stamens inserted above the petals, the outer ones petal like. Stigmas as many as the cells of the ovary, linear, incurved. Seed enclosed in a membranous aril. — Petioles and peduncles long and mostly spiral.

1. **N. odorata,** Ait. Rootstock long, creeping; leaves orbicular or reniform; 6′ - 12′ wide; flowers white, 2′ - 6′ wide, more or less fragrant. — Still water. May–Aug.

2. **N. flava**, Leitner. Rootstock short, oblong; leaves broadly oval, often with wavy margins, 3′–5′ wide; flowers yellow, 3′–4′ wide. — East Florida.

5. NUPHAR, Smith. Yellow Water-Lily.

Sepals 5–6, obovate, yellow within. Petals short, stamen-like, hypogynous, or none. Stamens at length recurved, persistent. Stigma circular, sessile, many-rayed. Seed without an aril. — Leaves and flowers floating or erect.

1. **N. advena,** Ait. Leaves thickish, cordate, or reniform, downy beneath; sepals concave; petals numerous, thick and fleshy. — Ponds and rivers. May – Aug.

2. **N. sagittæfolia**, Pursh. Leaves thin, floating, oblong, sagittate, smooth; petals none. — In still water, near the coast, Florida to N. Carolina. Rare.

Order 7. SARRACENIACEÆ. (Pitcher-Plant Family.)

Perennial marsh herbs, with hollow pitcher or trumpet-shaped leaves, and a naked or bracted scape bearing few or solitary nodding hypogynous flowers. Sepals 5, colored, persistent. Petals 5, imbricated in the bud, deciduous, rarely wanting. Stamens numerous: anthers adnate, introrse. Ovary 5-celled, many-ovuled. Placentæ central. Style single, 5-cleft, or umbrella-shaped. Capsule 5-celled, many-seeded. Embryo minute at the base of fleshy albumen.

1. SARRACENIA, L. Trumpet-leaf. Side-Saddle Flower.

Calyx 3-bracted. Petals obovate, drooping or incurved. Style umbrella-shaped, 5-angled; the angles emarginate, and bearing the minute hooked stigmas beneath. Capsule globose, papillose, loculicidally 5-valved. — Scape 1-flowered. Flowers large, purple or yellow Leaves 1-winged, hairy within, expanded at the summit into a short hood, usually containing water and dead insects; the earlier ones more broadly winged, with smaller tube and hood, or destitute of both.

* *Flowers purple.*

1. **S. purpurea,** L. (Huntsman's Cup.) Leaves short, spreading, the tube inflated, contracted at the throat, broadly winged; hood reniform, erect, hairy within, often purple-veined. — Mossy swamps. April – May. — Leaves 4′–6′ long. Scapes 1° high.

2. **S. Psittacina,** Michx. (Parrot-beaked Pitcher-Plant.) Leaves short, spreading; tube slender, broadly winged, marked with white spots, and reticulated with purple veins; hood globose, inflated, incurved-beaked, almost closing the orifice of the tube. — Pine barren swamps, Florida, Georgia, and westward. April – May. — Leaves 2′–4′ long. Scapes 1° high.

3. **S. rubra,** Walt. (Red-flowered Trumpet-leaf.) Leaves elongated, erect, slender, narrowly winged, paler above, and reticulated with purple veins; hood ovate, erect, beak-pointed, contracted at the base, tomentose within; flowers reddish purple. (S. Sweetii, *A. DC.*; hood not contracted.) — Sandy swamps in the middle and upper districts, Georgia to N. Carolina and westward. May. — Leaves 1°–2° long, shorter than the scapes.

4. **S. Drummondii,** Croom. Leaves elongated, erect, trumpet-shaped, narrowly winged; hood erect, rounded, short-pointed, hairy within, and like the upper portion of the tube white, variegated with reticulated purple veins. — Pine barren swamps, Florida, to the middle districts of Georgia, and westward. April. (S. undulata, *Decaisne.*) — Leaves 2° long. Scapes longer than the leaves. Flowers 3′ wide.

* * *Flowers yellow.*

5. **S. flava,** L. (TRUMPET-LEAF. WATCHES.) Leaves large, erect, trumpet-shaped, narrowly winged; hood yellow, erect, orbicular, slender-pointed, tomentose within, reddish at the base, or reticulated with purple veins. — Low pine barrens, Florida to North Carolina, and westward. April – May. — Leaves yellowish, 2° long. Hood 3′ – 4′ wide. Scapes as long as the leaves. Flowers 4′ – 5′ wide.

6. **S. variolaris,** Michx. (SPOTTED TRUMPET-LEAF.) Leaves erect, trumpet-shaped, broadly winged, spotted with white near the yellowish summit; hood ovate, concave, arching over the orifice of the tube, hairy and reticulated with purple veins within. — Low pine barrens, Florida to North Carolina, and westward. May. — Leaves 6′ – 12′ long, longer than the scapes. Flowers 2′ wide.

ORDER 8. DROSERACEÆ. (SUNDEW FAMILY.)

Low marsh herbs, with tufted radical leaves, and regular hypogynous white or purplish flowers, borne on a naked scape. Sepals 5, persistent. Petals 5, withering. Stamens 5 – 15, distinct: anthers extrorse. Ovary 1-celled, many-ovuled, with 3 – 5 parietal placentæ. Styles separate or united. Capsule 3 – 5-valved. Seeds anatropous. Embryo minute at the base of fleshy albumen.

1. DROSERA, L. SUNDEW.

Stamens 5. Styles 3 – 5, deeply 2-parted; the divisions 2 – many-lobed. Capsule 3-valved, many-seeded. — Leaves dewy with glandular hairs, circinate in vernation. Scape often forking. Flowers racemose, secund, scorpioid.

1. **D. filiformis,** Raf. Rootstock thick, creeping; leaves erect, filiform, elongated, smooth at the base; scape smooth, many-flowered; flowers large, bright purple; calyx hairy; seeds oblong, dotted. — Low pine barrens, in the lower districts. April. ♃ — Scapes 1° – 1½° high. Flowers 1′ or more wide.

2. **D. longifolia,** L. Rootstock long and slender; leaves linear-spatulate, gradually narrowed into the long and smooth petiole, the upper ones erect; scape smooth, declined at the base, 8 – 12-flowered; calyx obovate; seeds oblong. — Sandy swamps, oftener in water. Rare. May – June. ♃ — Scapes 4′ – 6′ high. Flowers small, white.

3. **D. capillaris,** Poir. Rootstock short or none; leaves spatulate, narrowed into the long and smoothish petiole; scape slender, smooth, erect.

9–20-flowered; calyx obovate; seeds oval, finely furrowed and granular. — Boggy ponds, Florida to South Carolina (*Bosc.*). April – May. ① or ♃ — Scape 6′–15′ high. Leaves 2′–3′ long. Flowers pale rose-color.

4. **D. rotundifolia,** L. Rootstock none; leaves orbicular, abruptly contracted into the hairy petiole; scape erect, smooth, 6–10-flowered; calyx ovoid; seeds covered with a loose membranaceous coat. — Mossy swamps. May – June. ① — Scapes 6′–9′ high. Leaves 2′ long. Flowers white.

5. **D. brevifolia,** Pursh. Glandular-pubescent throughout; rootstock none; leaves short, wedge-shaped; scape erect, 3–6-flowered; calyx oval; seeds ovoid, minutely glandular. — Low sandy pine barrens, Florida to North Carolina. April. ① — Scapes 3′–6′ high. Leaves ½′ long. Flowers ½′ wide, white.

2. DIONÆA, Ellis. FLY-TRAP.

Stamens 10–15. Styles united. Stigmas 5, fimbriate. Capsule 1-celled, opening irregularly. Placenta at the base of the cell, many-seeded. — A smooth perennial herb, with the habit of Drosera. Leaves spreading, on broadly winged spatulate petioles, with the limb orbicular, notched at both ends, and fringed on the margins with strong bristles; sensitive! Flowers in a terminal umbel-like cyme, white, bracted.

1. **D. muscipula,** Ellis. — Sandy bogs near the coast, North Carolina and the adjacent parts of South Carolina. April – May. — Scape 1° high, 8–10-flowered. Flowers 1′ wide. — For an interesting account of this remarkable plant, see Curtis's Plants of Wilmington, in the Boston Journal of Natural History, Vol. I., 1834.

ORDER 9. PAPAVERACEÆ. (POPPY FAMILY.)

Herbs, with colored juice, alternate exstipulate leaves, and regular hypogynous flowers. — Sepals 2–3, caducous. Petals 4–12, imbricated, deciduous. Stamens numerous. Anthers introrse. Capsule 1-celled, many-seeded, with parietal placentæ. Embryo minute, at the base of oily or fleshy albumen.

1. ARGEMONE, L. MEXICAN POPPY.

Sepals 2–3, hooded or horned. Petals 4–8. Stigmas sessile. Capsule oval, hispid, the 3–6 valves separating at the top from the persistent placentæ. Seed globular, pitted, crestless. — Glaucous herbs, with yellow juice, sessile pinnatifid bristly leaves, and showy white or yellow flowers.

1. **A. Mexicana,** L. Annual, hispid, 1°–3° high, branching; leaves blotched with white; flowers large and white, or smaller and yellow; calyx hispid. — Waste ground. Introduced.

2. STYLOPHORUM, Nutt. YELLOW POPPY.

Sepals 2, hairy. Petals 4. Style conspicuous. Capsule oval, bristly, the 3–4 valves separating from the base from the persistent placentæ. Seed crested. — Perennial herbs, with yellow juice, 1 - 2-pinnatifid leaves, and showy long-peduncled yellow flowers.

1. **S. diphyllum,** Nutt. Stem 1° - 1½° high; leaves petioled, 5 - 7-lobed; peduncles terminal, single or clustered; flowers 1′ wide, bright yellow. — Rich woods. Tennessee.

3. CHELIDONIUM, L. Celandine.

Sepals 2. Petals 4. Stigma 2-lobed. Capsule linear, 2-valved. Seed crested. — Herbs, with yellow juice, pinnately divided leaves, and small yellow umbelled flowers.

1. **C. majus,** L. Glabrous, branching, 1° - 2° high; divisions of the leaves lobed and toothed; umbel peduncled, 4-flowered; capsule knotty. — Waste ground. Introduced.

4. SANGUINARIA, L. Puccoon, Bloodroot.

Sepals 2. Petals 8 - 12. Stigmas 2. Capsule 2-valved, the valves separating from the filiform persistent placentæ. Seeds crested. — A stemless perennial herb, with orange-colored juice. Rhizoma thick. Leaves reniform, with 5 - 7 wavy or toothed lobes. Flowers white, solitary at the summit of the naked scape, fugacious.

1. **S. Canadensis,** L. — Rich woods, Florida and northward. March. — Scape 4′ - 6′ high. Flowers 1′ wide, appearing with the leaves.

Order 10. FUMARIACEÆ. (Fumitory Family.)

Smooth herbs with watery juice, alternate compound dissected leaves, without stipules, and irregular flowers. Sepals 2. Petals 4; the two outer or one of them spurred or gibbous at the base; the two inner callous at the apex, and cohering over the stigma. Stamens 6, commonly united in two sets of three each, placed opposite the outer petals, hypogynous: anther of the middle stamen 2-celled, of the lateral ones 1-celled. Capsule 1-celled and 2-valved, with two parietal placentæ, or 1-seeded and indehiscent. Embryo minute in fleshy albumen.

1. ADLUMIA. Raf. Climbing Fumitory.

Petals united, free at the summit, the two outer gibbous at the base. Filaments united. Stigma 2-crested. Capsule linear-oblong, 4 - 8-seeded. Seed reniform, crestless. — A smooth biennial vine. Leaves 3-pinnate, with tendril-like petioles. Flowers purplish, in axillary drooping panicles.

1 **A. cirrhosa,** Raf. — Mountains of North Carolina and Tennessee. — Stem climbing high. Leaflets thin, obovate, 2 - 3-lobed. Corolla thick and spongy.

2. DICENTRA, Bork. Dutchman's Breeches.

Petals connivent but scarcely united, the two outer spurred or gibbous at the base, the inner crested. Filaments slightly united in two sets. Stigma

2-crested. Capsule 10 – 20-seeded. Seed crested. — Stemless herbs, from creeping or granular rootstocks, with ternately divided long-petioled leaves, and a naked scape of racemose nodding flowers.

1. **D. Cucullaria,** DC. Rootstock of clustered grains; scape few-flowered; lobes of the leaves linear; corolla white, triangular, the divergent spurs longer than the pedicel; inner petals minutely crested. — Rich woods in the upper districts. April.

2. **D. Canadensis,** DC. (Squirrel-Corn.) Rootstock of scattered grains, creeping; scape few-flowered; leaf-lobes oblong-linear; corolla greenish, cordate-oblong, the short rounded spurs mostly shorter than the pedicel; inner petals crested. — Mountains of North Carolina and Tennessee. May.

3. **D. eximia,** DC. Rootstock creeping, scaly; scape many-flowered in a compound raceme; leaf-lobes oblong; corolla cordate-oblong, purple; inner petals crested. — Mountains of North Carolina and Tennessee. June – July

3. CORYDALIS, Vent.

Petals separate, deciduous; one of the outer ones spurred at the base. Filaments united nearly to the summit, with a gland at the base. Stigma 2-lobed. Capsule silique-like, many-seeded. Seed crested. — Caulescent, annual or biennial herbs, with bipinnate dissected leaves, and flowers in lateral and terminal racemes.

1. **C. glauca,** Pursh. Glaucous; stem erect, 1° – 2° high; leaves ternately divided, the lobes ½′ – 1′ long; racemes few-flowered; corolla purplish, tipped with yellow, short-spurred; capsule erect. — Mountains of North Carolina. August.

2. **C. micrantha,** Gray. Stem diffuse, 10′ – 20′ long; leaf-lobes small, obtuse; early racemes long, 10 – 20-flowered, the corolla ½′ long, crested, golden yellow, and the spar mostly longer then the short pedicel; later ones short and few-flowered, these very small and fertilized in the bud; capsule erect-spreading, even; seed smooth, turgid. — (C. aurea, var. australis, *S. Fl.*) — Cultivated ground in the lower districts. April – May.

3. **C. flavula,** D.C. Stem slender, 5′ – 10′ high; leaf-lobes small and acute; racemes few-flowered; corolla 3″ – 4″ long, pale yellow, crested; the short spur much shorter than the pedicel; capsule slightly torulose, spreading or drooping; seed rugose-reticulate, the margins acute. — Dry woods in the upper districts. May – June.

4. FUMARIA, L. Fumitory.

Posterior petal spurred, united below with the two inner ones. Stamen united in two sets of three each. Style deciduous. Fruit globular, 1-seeded, indehiscent; feeds crestless. — Tender branching annuals, with finely dissected leaves, and small flowers in lateral or terminal racemes.

1. **F. officinalis,** L. Leaves bipinnately divided, the narrow lobes widening upwards; racemes many-flowered; sepals sharply toothed; petals flesh-color, tipped with crimson. — Waste places, sparingly introduced.

ORDER 11. CRUCIFERÆ. (MUSTARD FAMILY.)

Herbs with pungent watery juice, alternate exstipulate leaves, and regular hypogenous racemose or corymbose bractless flowers. Fruit a silique or silicle. — Sepals 4, deciduous. Petals 4, regular, placed opposite each other in pairs, their spreading limbs forming a cross. Stamens 6 (rarely fewer), two of them shorter. Capsule 2-celled by a membranaceous partition which unites the two marginal placentæ, from which the two valves separate at maturity, or indehiscent and nut-like, or separating into 1-seeded joints. Seeds campylotropous, without albumen, filled with the large embryo, which is curved or folded in various ways, or straight only in Leavenworthia. (The genera are distinguished chiefly by the fruit and seed; the flowers being nearly similar throughout the order.)

Synopsis.

I. SILIQUOSÆ. Fruit a silique, few–many-seeded.

∗ Cotyledons flattened, parallel with the partition, one edge applied to the ascending radicle (*accumbent*).

+ Valves of the fruit nerveless.

1. **NASTURTIUM.** Silique short, nearly terete. Seeds in two rows in each cell.
2. **CARDAMINE.** Silique linear, compressed. Seeds wingless, in a single row.
3. **DENTARIA.** Silique lanceolate, compressed. Seeds wingless, in a single row.
4. **LEAVENWORTHIA.** Silique oblong. Seeds winged. Embryo straight.

+ + Valves of the fruit 1-nerved.

5. **ARABIS.** Silique linear, elongated: valves flattened.
6. **IODANTHUS.** Silique nearly terete: valves convex. Flowers purple.
7. **BARBAREA.** Silique terete or 4-sided. Seed wingless. Flowers yellow.

∗ ∗ Cotyledons flat, with one edge turned toward the partition, and the back of one of them applied to the ascending radicle (*incumbent*).

8. **SISYMBRIUM.** Silique sessile, nearly terete.
9. **WAREA.** Silique stalked, compressed. Petals on long claws.
10. **ERYSIMUM.** Silique 4-angled, valves keeled. Leaves entire. Flowers yellow.
11. **HESPERIS.** Silique nearly terete. Seeds triangular. Leaves toothed or serrate.
12. **SINAPIS.** Silique beaked. Seeds globular. Cotyledons folded.

II. SILICULOSÆ. Fruit a silicle.

∗ Silicle compressed parallel with the broad partition, or globular.

+ Cotyledons accumbent.

13. **DRABA.** Silicle oval or oblong, many-seeded: valves 1–3 nerved.
14. **LESQUERELLA.** Silicle orbicular, few-seeded: valves nerveless: flowers yellow.
15. **ALYSSUM.** Silicle orbicular, 2–4-seeded: flowers white.

+ + Cotyledons incumbent.

16. **CAMELINA.** Silicle obovoid: valves 1-nerved.

∗ ∗ Silicle compressed contrary to the narrow partition. Cotyledons incumbent, rarely accumbent.

17. **SENEBIERA.** Valves of the silicle globular, rugose: seeds solitary.
18. **LEPIDIUM.** Valves of the silicle boat-shaped: seeds solitary.
19. **CAPSELLA.** Valves of the silicle boat-shaped: seeds numerous.

III. LOMENTACEÆ. Fruit separating transversely into joints.

20. **CAKILE.** Fruit 2-jointed.

1. NASTURTIUM, R. Br. WATER-CRESS.

Silique nearly terete, linear or oblong, or short and silicle-like, usually curved upward; the valves nerveless. Seeds numerous, small, in two rows in each cell, not margined. Cotyledons accumbent. — Herbs. Leaves pinnately lobed. Flowers white or yellow, small.

* *Petals yellow, minute (except No. 6).*

1. **N. tanacetifolium,** Hook. & Arn. Stems diffuse, 6′-12′ long; leaves bipinnatifid, the lobes toothed; silique oblong-linear, twice as long as the pedicel. — Ditches and wet ground in the lower districts. May - June.

2. **N. sessiliflorum,** Nutt. Stem erect, branching, 1°-2° high; leaves oblong-obovate, pinnatifid towards the base, toothed above; silique linear-oblong; nearly sessile; style short and thick. — Wet ground. South Carolina, Tennessee, and westward. May - June.

3. **N. palustre,** DC. Smooth or hairy; stem erect, 1°-3° high, branching; leaves pinnatifid, the lobes oblong, toothed; silique short, ovate or oblong-ovate, barely half as long as the spreading pedicel; style slender. — Wet ground, chiefly in the upper districts.

4. **N. obtusum,** Nutt. Low and spreading; leaves pinnatifid, the oblong or rounded lobes sparingly toothed; silique oblong, obtuse, twice as long as the slender pedicel. — Banks of the Mississippi.

5. **N. limosum,** Nutt. "Very smooth; leaves lanceolate, laciniately pinnatifid towards the base, nearly entire above, or angularly toothed, the lobes serrate or entire; pedicels much shorter than the short silique; stigma nearly sessile." — New Orleans (*Nuttall*).

6. **N. sylvestre,** R. Br. Stem ascending; leaves pinnately divided into narrow toothed lobes; silique linear, mostly shorter than the slender pedicel; style very short; petals yellow, longer than the calyx. — New Orleans. Introduced.

* * *Petals white, conspicuous.*

7. **N. officinale,** R. Br. (WATER-CRESS.) Stems spreading and rooting; leaves pinnate, the oblong or roundish lobes nearly entire; silique linear, curved, longer than the spreading pedicel. — Cool springs and branches. Introduced.

8. **N. lacustre,** Gray. Aquatic; stem 2°-3° long; immersed leaves pinnately divided into indefinite capillary segments, deciduous; the emerged ones oblong; silique obovate, shorter than the pedicel; style shorter than the ovary. — In a cool spring, Marianna, Florida, and New Orleans. Rare.

2. CARDAMINE, L.

Silique linear flattened, the valves veinless, usually opening elastically from the base. Seeds wingless, disposed in a single row in each cell and suspended by a filiform stalk. Cotyledons accumbent. — Tender, mostly smooth herbs, with usually pinnately divided leaves, and white flowers.

* *Leaves entire: flowers conspicuous: perennials.*

1. **C. rotundifolia,** DC. Root fibrous: stem simple, 6′ – 12′ high, soon bearing from the root or upper axils long and leafy runners; leaves oval or roundish, with wavy or toothed margins, the lowest long-petioled; silique subulate; seeds oval. — Cool springs. Mountains of North Carolina. June – July.

2. **C. rhomboidea,** DC. Root tuberous; stem without runners, 12′ – 18′ high; lower leaves round-cordate, petioled, the upper oblong-ovate, toothed, sessile; silique fusiform; seed roundish. — Wet springy places, chiefly in the upper districts. May.

* * *Leaves pinnately divided: flowers small: annuals.*

3. **C. hirsuta,** L. Smooth or hairy; stems branching, ½° – 2° high; leaves pinnate, the leaflets varying from oval to linear, toothed or entire; silique narrow-linear, erect; seeds minute, oval. — Wet ground, sometimes in dry soil. April – May.

4. **C. Clematitis,** Shuttlw. Smooth, 6′ – 12′ high; leaves broadly 3-lobed and toothed, the lowest reniform, entire; racemes short; silique narrow-linear, compressed, tipped with the slender style. — Cool shaded banks, mountains of North Carolina. July.

5. **C.** (?) **curvisiliqua,** Shuttlw. Stem erect from the creeping base, 6′ – 12′ high, branching; leaves pinnate, the leaflets few, oblong, the terminal one larger, oval or obovate; racemes at length elongated; silique subterete, incurved, the valves finely veined; tipped with the short thick style; seeds wingless, oval, emarginate. Wet places, ditches, etc. Florida.

3. DENTARIA, L. Toothwort.

Silique linear. Seeds ovate, in a single row in each cell, on a flattened stalk, not margined. Style slender. — Perennial smooth herbs, erect from a fleshy rootstock, the simple stem bearing at the summit 2 – 3 palmately divided leaves, and a single long-peduncled raceme of large white or purple flowers. Radical leaves mostly separate and solitary.

* *Rootstock continuous: flowers white.*

1. **D. diphylla,** Michx. Stem 6′ – 9′ high; leaves 2, ternate, long-petioled; leaflets ovate-lanceolate, coarsely toothed, of the radical leaf ovate or roundish. — Rich woods. Mountains. April.

2. **D. multifida,** Muhl. Stem slender, 6′ – 12′ high; leaves ternate, leaflets divided into three simple or pinnately parted linear entire segments. — Rocky woods in the upper districts. April.

* * *Rootstock jointed: flowers mostly purple.*

3. **D. laciniata,** Muhl. (Pepper-root.) Stem 4′ – 12′ high; leaves usually 3, 3 – 5-nate; leaflets varying from oblong to linear, coarsely and sharply toothed or lobed; the radical similar. — Rich woods in the middle and upper districts. March.

4. **D. heterophylla,** Nutt. Stem 6′ – 12′ high; leaves mostly 2, small (1′ or less), ternate, the leaflets lanceolate or linear, entire; radical leaves with large ovate crenately toothed leaflets. — Rich woods in the upper districts. March.

4. LEAVENWORTHIA, Torr.

Silique oblong or oblong-linear, compressed, often contracted between the seeds. Seeds in a single row in each cell, orbicular, flat, winged. Embryo straight or nearly so. — Small annual or biennial herbs, with short 1 – few-flowered stems, pinnatifid leaves, and yellow, white, or purplish flowers, on elongated pedicels.

1. **L. aurea,** Torr. Leaves mostly radical, with 4 – 8 oblong toothed lobes, the terminal one larger and rounded; raceme at length 4 - 10-flowered; style manifest; embryo straight. — On flat rocks in the upper districts of Alabama, and westward. — Plant 2′ – 6′ high. Flowers yellow

2. **L. Michauxii,** Torr. Leaves as in No. 1; flowers mostly solitary, on radical peduncles; style almost none; embryo slightly curved. (Cardamine uniflora, *Michx.*) — Rocks, Alabama and Tennessee. — Flowers purplish or white.

3. **L. torulosa,** Gray. Silique linear, torose; style fully equalling the breadth of the silique; seeds broadly oval, narrowly winged; radicle nearly transverse, strictly applied to the edges of the cotyledons at the base on one side; petals purplish with a yellow base. — Cedar barrens, Tennessee (*Dr. Gattinger*).

4. **L. stylosa,** Gray. Slender, strictly stemless; silique oval or broadly oblong (4″ long), plane, surmounted by a slender style of fully 2 lines in length; seeds only 3 – 6, orbicular, distinctly winged; embryo as in the preceding; petals pure golden yellow. — With the preceding.

5. ARABIS, L.

Silique elongated, linear, flattened; valves 1-nerved, or finely veined. Seeds numerous, in a single row in each cell, roundish, usually winged or margined. Cotyledons accumbent. — Chiefly annual or biennial herbs. Radical leaves mostly pinnatifid; those of the stem sessile and often cordate or sagittate at the base. Flowers white or rose-colored, in terminal racemes.

* *Silique compressed-filiform, erect or spreading; seeds wingless or narrowly margined.*

1. **A. hirsuta,** Scop. Stem slender, erect, pubescent, 2° high; leaves lanceolate or oblong, cordate-clasping, smooth, sparingly denticulate, the radical petioled; petals white, twice as long as the sepals; silique (and pedicel) erect, 2′ long, tipped with the short style; seed margined. — Banks of the Coosa River, Georgia. May.

2 **A. patens,** Sulliv. Leaves ovate, coarsely toothed; pedicels and siliques spreading; style distinct. Otherwise like the last. — River banks, Tennessee (*Gattinger*). May.

3. **A. dentata,** Torr. & Gray. Pubescent and roughish, branching from the base, 1° high; leaves oblong, toothed, clasping and auriculate at the base, 1′ – 2′ long, the lowest obovate, petioled; petals barely exceeding the calyx; silique spreading, 1′ long; seed not margined. — Rich soil, Tennessee April.

4. **A. lyrata,** L. Smooth, branching, 4′ - 10′ high; radical leaves tufted, pinnatifid, of the stem linear, entire; petals twice as long as the calyx; silique erect, pointed by the short style; seeds not margined. — Mountains of North Carolina. April.

* * *Silique linear, flat, erect-spreading; seed winged.*

5. **A. Ludoviciana,** Meyer. Smooth or nearly so, branching from the base, 4′ - 10′ high; leaves pinnately lobed, the lobes oblong or linear, toothed; flowers minute; stigma sessile; seeds orbicular. — Waste ground around homesteads. March - May.

* * * *Silique linear, recurved-spreading or drooping; seed broadly winged.*

6. **A. Canadensis,** L. Pubescent, with branching hairs; stem 2° - 3° high, mostly simple; leaves lanceolate, sessile, the radical pinnatifid; petals exserted; silique flat, drooping, 2′ - 3′ long. — Dry rocky woods in the upper districts. April - May.

7. **A. lævigata,** DC. Smooth and glaucous; stem mostly simple, 1° - 2° high; lower leaves mostly toothed or pinnatifid, the upper linear and entire, clasping and sagittate at the base, petals slightly exserted; silique 3′ - 4′ long, recurved. — Rocks along the mountains. April.

6. IODANTHUS, Torr. & Gray.

Silique linear, elongated, terete; the valves nerveless. Seeds in a single row in each cell, not margined. Cotyledons accumbent. Claws of the violet purple petals longer than the calyx. — A smooth perennial, with ovate-oblong pointed and toothed leaves, the lowest sometimes lyrate-pinnatifid, and showy flowers in panicled racemes.

1. **I. hesperidoides,** Torr. & Gray. (Hesperis pinnatifida, *Michx.*) — Banks of rivers, Tennessee, and northward. May - June. — Stem 1° - 3° high. Silique 1′ or more long, curving upward.

7. BARBAREA, R. Br.

Silique long, linear, terete or 4-sided, the valves keeled. Seeds in a single row in each cell, marginless. Cotyledon thick, accumbent. — Biennial or perennial herbs, with pinnatifid clasping leaves, and yellow flowers.

1. **B. vulgaris,** R. Br. (Scurvy Grass.) Lower leaves lyrate, with the terminal lobe obovate, the upper ones pinnatifid, with oblong-linear lobes; silique compressed, barely thicker than its pedicel; style short and thick. — Waste places, North Carolina. Introduced.

8. SISYMBRIUM, L. Hedge-Mustard.

Silique linear or oblong, terete or angled, with 1 - 3-nerved valves. Seeds in a single row in the cells, marginless. Cotyledons incumbent. — Herbs, with simple or pinnately divided leaves, and small white or yellow flowers.

1. **S. canescens,** Nutt. Pubescent; stem ½° - 2° high; leaves bipinnatifid, the lobes small and toothed; silique ½′ long, shorter than the spreading pedicel; petals barely exserted, greenish yellow. — Fallow ground. March - May. ①.

2. **S. Thaliana,** Gaud. Stem smooth and branched above, hairy at the base, 6′–12′ high, lowest leaves spatulate-obovate, petioled, the upper lanceolate, sessile, 1′ long; petals white, exserted; siliques linear, spreading, longer than pedicel. (Cardamine spathulata, *Michx.*?) — Low ground in the upper districts. Introduced. April. ②.

3. **S. officinale,** Scop. Stem 2°–3° high, widely branched; leaves runcinate, pubescent; petals yellow; silique subulate, nearly sessile, appressed to the rhachis. — Waste ground in the upper districts. Introduced. ①.

9. WAREA, Nutt.

Silique linear, flattened, long-stalked, recurved; the valves 1-nerved. Seeds in a single row in each cell. Cotyledons oblong, flat, incumbent. — Smooth and erect branching annuals. Leaves entire. Flowers showy, in corymb-like racemes. Petals long-clawed, white or purple.

1. **W. amplexifolia,** Nutt. Leaves oval and slightly clasping; petals oval, bright purple; silique linear. — Sand hills, Florida. Sept. — Stem 1°–2° high.

2. **W. cuneifolia,** Nutt. Leaves wedge-lanceolate; petals obovate, white or rarely purple; silique narrow-linear. — Sand hills, Florida and Georgia. Sept. — Stem 1°–2° high.

10. ERYSIMUM, L.

Silique linear, 4-angular, the valves keeled. Seeds in a single row in each cell, oblong, marginless. Cotyledon flat, incumbent. — Chiefly biennial herbs, with narrow leaves, and yellow flowers.

1. **E. cheiranthoides,** L. (Wormseed Mustard.) Stem erect, branching above, closely pubescent; leaves thin, lanceolate, acute, entire or slightly toothed, roughish; flowers small; silique ascending, rather longer than the slender pedicel, the angles rounded. — North Carolina (*Curtis*). July. — Stem 1°–2° high. Silique 8′–10′ long.

11. HESPERIS, L. Rocket.

Silique nearly terete. Seeds oblong-triquetrous. Cotyledons incumbent Petals obovate or linear. Stigmas erect. — Chiefly annuals or biennials.

1. **H. matronalis,** L. Stem tall, simple, pubescent; leaves oblong, roughish, denticulate; petals large purple. — North Carolina. Escaped from cultivation.

12. SINAPIS, L. Mustard.

Silique terete or 4-angled, prolonged into an empty or 1-seeded beak, the valves 1–5-nerved. Seed globose, in a single row. Cotyledons incumbent, folded around the radical. — Erect branching annual or biennial herbs, with coarse pinnatifid leaves, and yellow flowers. All introduced.

1. **S. nigra,** L. (Black Mustard.) Siliques smooth, appressed to the rachis; beak short; seed dark brown. — Grain-fields.

2. **S. alba,** L. (White Mustard.) Siliques hispid, on spreading pedicels, scarcely as long as the sword-shaped beak; seed pale brown. — With the preceding.

3. **S. arvensis,** L. (Charlock.) Siliques smooth, angular, knotted, spreading thrice as long as the 2-edged beak; seed black. — Around homesteads.

13. DRABA, L.

Silicle oblong or oval, flattened parallel with the broad partition. Seeds numerous in two rows in each cell, compressed, wingless. Cotyledons accumbent. — Small herbs with entire or toothed leaves, and yellow or white flowers in terminal racemes.

§ 1. DRABA. — *Petals entire.*

1. **D. brachycarpa,** Nutt. Annual; minutely downy; stems leafy, simple or branched; radical leaves round-ovate, stalked, those of the stem oblong-linear; silicle oval, as long as the pedicel. — Middle districts of Georgia, in dry soil, and westward. March – April. — Stem 2′ – 6′ high. Silicle 2″ – 3″ long. Flowers white.

2. **D. Caroliniana,** Walt. Annual; stems leafy and hispid at the base, smooth above; leaves tufted, spatulate-obovate, hispid; silicle linear-oblong, two or three times as long as the pedicel. — Dry sterile soil. Feb. – April. — Stems 1′ – 3′ high. Silicle 4″ – 6″ long. Flowers white.

3. **D. cuneifolia,** Nutt. Annual; leaves obovate, wedge-shaped, or the lowest spatulate, toothed; raceme somewhat elongated in fruit (1′ – 3′), at length equalling the naked peduncle; petals emarginate, much longer than the calyx; silicles oblong-linear, minutely hairy, longer than the horizontal pedicels. — West Florida (*Nuttall*), and westward. March – April.

4. **D. ramosissima,** Desv. Perennial; stems diffuse, pubescent; leaves linear-lanceolate or the lowest oblanceolate and crowded, coarsely toothed; racemes corymbose-branched; silicle lanceolate, flat, twisted, hairy; style slender. — Mountains of North Carolina. April – May. — Stems 4′ – 8′ long. Flowers white.

§ 2. EROPHILA. — *Petals 2-cleft.*

5. **D. verna,** L. Stems naked, slender (2′ – 4′ high); leaves radical, oblong; silicles oblong, smooth, shorter than the pedicels, scattered; flowers small, white. — Waste places, chiefly in the upper districts. Introduced. ①.

14. LESQUERELLA, Watson.

Silicle globular, or flattened parallel to the orbicular partition, the valves nerveless. Seeds few, flat. Cotyledons accumbent. Filaments toothless. — Low herbs, pubescent or hoary with stellate hairs. Racemes many-flowered. Flowers yellow.

1. **L. Lescurii,** Watson. Biennial, pubescent; stems clustered, ½° high; leaves oval or oblong, ½′ long, toothed, half clasping by the sagittate base, the lowest narrowed in a petiole; style half as long as the flattened hispid 2 – 8-seeded silicle; seed wing-margined. — Hills near Nashville, Tennessee. April – May.

2. **L. globosa,** Watson. Biennial, hoary-tomentose; stems clustered, mostly simple, 1° high; leaves lanceolate, tapering to the base, mostly entire; style longer than the globular 1-4-seeded silicle; seeds wingless. — Bluffs of the Cumberland River, Tennessee. April.

15. ALYSSUM, Tourn.

Silicle flat, 2-4-seeded. Filaments often toothed. Flowers (of ours) white. — Otherwise like the last.

1. **A. maritimum,** L. (SWEET ALYSSUM.) Perennial, prostrate; leaves lanceolate; silicle 2-seeded. — North Carolina. Introduced.

16. CAMELINA, Crantz.

Silicle ovoid or pear-shaped, flattened parallel to the broad partition; valves 1-nerved. Seeds numerous, oblong. Cotyledons incumbent. Style slender. — Flowers small, yellow.

1. **C. sativa,** Crantz. Leaves alternate, sagittate; silicle large. — Fields, North Carolina, and northward. Introduced. ①.

17. SENEBIERA, Poir.

Silicle didymous, compressed contrary to the narrow partition; the cells globular, 1-seeded, crested or pitted, indehiscent, at maturity separating from the partition. Cotyledons incumbent. — Annual or biennial diffuse strong scented herbs, with pinnately lobed or divided leaves, and minute white flowers, in short racemes, opposite the leaves. Stamens 2, 4, or 6.

1. **S. pinnatifida,** DC. Stem prostrate; leaves deeply pinnatifid, with the numerous lobes toothed on the upper edge; silicle pitted, emarginate at both ends. — Waste places, Florida to North Carolina. March - May. — Racemes many-flowered.

2. **S. Coronopus,** Poir. Stem prostrate; leaves deeply pinnatifid, with the lobes entire, toothed, or pinnatifid; silicles not emarginate, the margins crested. — Waste places. Introduced. March - April.

18. LEPIDIUM, L. PEPPERGRASS.

Silicle rounded or obcordate, compressed contrary to the narrow partition; valves carinate; cells 1-seeded. Cotyledons accumbent and incumbent. Petals sometimes wanting. Stamens 2, 4, or 6. — Leaves entire, toothed, or pinnately divided. Flowers minute, in terminal racemes.

1. **L. Virginicum,** L. Smooth; stem erect, much branched; leaves lanceolate, sharply toothed, the lowest tapering and mostly pinnatifid toward the base; silicle orbicular, wingless; cotyledons accumbent; stamens mostly two. — Waste places, very common. March - June. ① — Stem 1° - 2° high.

19. CAPSELLA, Vent. SHEPHERD'S PURSE.

Silicle triangular wedge shaped, flattened contrary to the narrow partition, many-seeded; valves wingless. Cotyledons incumbent. — An annual herb, with the radical leaves clustered and pinnatifid; those of the stem clasping and often entire. Racemes elongated. Silicle shorter than the spreading pedicel. Flowers white.

1. **C. Bursa-pastoris,** Mœnch. — Waste ground. March – April. Introduced.

20. CAKILE, Tourn. SEA MUSTARD.

Loment 2-jointed, the joints thick, 1-celled, 1-seeded. Seed of the upper joint erect, of the lower suspended. Cotyledons accumbent. — Fleshy seaside annuals, with pinnatifid or lobed leaves, and racemose white or purple flowers.

1. **C. maritima,** Scop., var. **æqualis,** Chapm. Glabrous; stem much branched, 1° – 2° high; leaves oblong-obovate, toothed or pinnatifid, petioled; petals wedge-shaped, pale purple; loment (dry) sulcate, 6″ – 8″ long, short-stalked, the upper joint beaked, larger than the lower one. — Drifting sands along the coast. May – Sept.

ORDER 12. CAPPARIDACEÆ. (CAPER FAMILY.)

Herbs, shrubs, or trees, with acrid watery juice, alternate, simple or palmately compound leaves, and regular hypogynous flowers. Stipules spiny or wanting. — Sepals 4, imbricated or valvate in the bud. Petals 4, mostly clawed. Stamens 6 or numerous. Ovary 1-celled: ovules amphitropous or campylotropous, attached to the two parietal placentæ. Fruit silique-like, and 2-valved or indehiscent. Seeds reniform, without albumen. Embryo curved.

Synopsis.

* Calyx 4-septalous. — Herbs.

1. POLANISIA. Stamens 8 – 32, free. Torus short. Style filiform.
2. CLEOME. Stamens 6, free. Torus short. Stigma sessile.
3. GYNANDROPSIS. Stamens 6. Filaments partly united with the stipe of the ovary.

* * Calyx 4-parted. — Shrubs.

4. CAPPARIS. Stamens numerous, free. Leaves entire.

1. POLANISIA, Raf.

Petals clawed. Stamens 8 – 32: filaments free, unequal, filiform. Receptacle short, bearing a truncated or emarginate gland on the upper side. Ovary sessile or short-stipitate. Style filiform. Capsule silique-like, many-seeded. — Annual clammy herbs, with palmately trifoliolate petioled leaves, and racemose flowers.

1. **P. tenuifolia,** Torr. & Gray. Stem slender, erect, branching; leaflets filiform, longer than the petiole; petals oval, entire, short clawed, unequal; stamens 12 – 15; capsule linear, smooth, short-stipitate, pointed with the persistent style; seeds minute, circular. — Georgia (*Le Conte*) and South Florida (*Blodgett*). — Stem 1° – 2° high. Flowers white.

2. **P. graveolens**, Raf. Glandular-pubescent, branching, 6′ – 18′ high; leaflets oblong or lanceolate; petals cuneate, notched, 4″ long, yellowish

white; stamens 10 - 12, barely longer than the petals; style shorter than the ovary; capsule nearly sessile. — Margins of ponds, Tennessee.

3. **P. uniglandulosa,** DC. Glandular-pubescent; leaflets and bracts ovate or oblong; raceme loosely many-flowered; petals yellow (½′ long), the obovate notched limb as long as the capillary claw; stamens 20 - 30, 2 - 3 times as long as the petals; style longer than the ovary; capsule stipitate. — Roadsides, Dadeville, Alabama (*Mohr*).

2. CLEOME, L.

Petals long-clawed, nearly equal, entire. Stamens 6, the filaments distinct, Stigma sessile. Capsule silique-like, stipitate, or nearly sessile, many-seeded. — Chiefly annuals, with palmately 3 - 7-foliolate leaves with spiny stipules, or none, and racemose bracted flowers.

1. **C. pungens,** Willd. Clammy-pubescent; leaves 5 - 7-foliolate, the leaflets lanceolate; bracts cordate; flowers purple; capsule shorter than the elongated stipe. — Waste ground. Introduced. — Stem 2° - 4° high.

3. GYNANDROPSIS, DC.

Like the preceding, but the filaments partly adnate to the stipe of the ovary.

1. **G. pentaphylla,** DC. Stem 2° - 3° high; leaves 3 5-foliolate, the leaflets oblong-obovate; flowers white; capsule hispid. — Waste ground. Introduced.

4. CAPPARIS, L. Caper-tree.

Sepals partly united, often with a gland at the base. Petals imbricated. Stamens numerous. Stigma sessile. Fruit mostly silique-like, stipitate, many-seeded. — Shrubs or trees, with simple entire coriaceous leaves, spiny or adnate stipules, and mostly showy flowers.

1. **C. Jamaicensis,** Jacq. Leaves elliptical, the lower surface, like the branches and inflorescence, covered with minute scales; peduncles 2-flowered; sepals ovate, valvate, about half the length of the white petals; stamens 16 - 32, villous at the base; capsule dry. — Keys of South Florida. — Shrub 8° - 10° high.

2. **C. cynophallophora,** L. Leaves oblong, glabrous; peduncles few-flowered; sepals imbricated, rounded, much shorter than the white petals; stamens indefinite, naked, 2′ long; capsule pulpy within. — Coast and keys of South Florida. — A shrub or small tree.

Order 13. VIOLACEÆ. (Violet Family.)

Herbs or shrubs. Leaves alternate, simple, involute in the bud. Stipules persistent. Flowers irregular, axillary, on bracted peduncles, nodding. Sepals 5, persistent, imbricated in the bud. Petals 5, hypogynous, obliquely convolute in the bud. Stamens 5, alternate with the petals, connivent. Anthers adnate, introrse. Style single. Capsule 1-celled, loculicidally 3-valved, many-seeded: valves each bearing a placenta in the middle. Embryo straight, in fleshy albumen.

1. VIOLA, Tourn. VIOLET, HEART'S-EASE.

Sepals nearly equal, produced at the base into a free appendage. Petals unequal, the lower one produced into a sac or spur at the base. Stamens short; the broad filaments membranaceous and prolonged above the anthers; the two anterior ones spurred on the back. Stigma often beaked. — Low herbs. Peduncles 1-flowered.

§ 1. *Leaves and peduncles arising from a subterranean rhizoma, without apparent stems: perennials, flowering in early spring, the later flowers apetalous.*

* *Flowers blue or purple.*

1. **V. cucullata,** Ait. Smooth or pubescent; leaves long-petioled, all undivided, varying from cordate-ovate to reniform, serrate, the sides at the base involute when young; the later ones acutish; lateral petals bearded; stigma beakless. — Low ground, common. — Flowers blue, often variegated with white.

2. **V. palmata,** L. Downy or hairy, rarely smooth; earliest leaves entire, cordate or reniform; later ones variously 3 – 9-lobed, the central lobe always largest, lanceolate or oblong, the lateral ones spreading; flowers large, with the lateral and lower petals bearded. — Dry soil, common. — Flowers purple or blue.

3. **V. villosa,** Walt. Downy; leaves prostrate, short-petioled, orbicular or broadly cordate, crenate, purple-veined; peduncles mostly shorter than the leaves, flowers small. — Dry sandy or gravelly soil, Florida to North Carolina. — Flowers pale blue.

4. **V. sagittata,** Ait. Smoothish; leaves cordate-oblong, acute, toothed and somewhat sagittate at the base, the earliest ones rounded, short-petioled; lateral petals bearded. — Damp pastures in the upper districts. — Flowers larger than in the last, deep blue.

5. **V. pedata,** L. Smoothish; leaves all 7 – 9-parted, the divisions linear-lanceolate, entire or toothed, narrowed downward; petals beardless. — Dry sandy soil in the middle and upper districts. — Flowers large, deep blue or purple.

* * *Flowers white.*

6. **V. primulæfolia,** L. Smooth or hairy; leaves oblong, mostly acute, crenate, cordate or abruptly decurrent on the winged petiole; petals often acute, the lower ones bearded and striped with purple. — Low grounds, common. — Rhizoma slender, and commonly bearing long leafy runners. Flowers small.

7. **V. lanceolata,** L. Smooth or pubescent; leaves lanceolate or linear, narrowed into the long and winged petioles; flowers beardless. — Low pine barrens. — Rhizoma like the last.

8. **V. blanda,** Willd. Minutely pubescent; rhizoma slender; leaves small, orbicular-cordate, crenate, shorter than the peduncles; flowers small,

beardless, sweet-scented, the lower petal striped with purple. — Low ground and meadows, North Carolina. — Petioles slender, wingless. Leaves rarely acute.

* * * *Flowers yellow: rootstock short and fleshy.*

9. **V. rotundifolia,** Michx. Nearly glabrous, stoloniferous; leaves round-cordate, the sinus closed; petals striped with purple, the lateral bearded; spur very short. — Shady woods, mountains of North Carolina and Tennessee.

§ 2. *Caulescent: perennial.*

* *Stems leafy only at the summit: flowers yellow: stipules not fringed: spur small.*

10. **V. pubescens,** Ait. Pubescent; stem 6′–12′ high, with a bract-like stipule below the middle; leaves broadly cordate or deltoid, coarsely serrate; spur very short; capsule densely villous. — Shady woods and banks in the upper districts.

Var. **scabriuscula**, Torr. & Gray. Nearly glabrous; stem bractless leaves smaller (1½′ long); capsule glabrous. — With the type.

11. **V. hastata,** Michx. Glabrous; rootstock thick and creeping; stem 4′–12′ high, bractless; leaves lanceolate or ovate-lanceolate from a cordate and hastate base, finely serrulate; stipules minute; spur very small. — Shaded banks, mountains of North Carolina (*Michaux*). Athens, Georgia (*Elliott*). Bristol, Florida. Very rare.

Var. **glaberrima,** Ging. Stem glabrate, 6′–10′ high; leaves rhombic ovate, acute or truncate (rarely cordate) at the base, pubescent on the veins. — Dry rich woods, chiefly in the upper districts.

Var. **tripartita** (V. tripartita, *Ell.*). Stem hairy; leaves 3–5-parted or lobed, the divisions dentate-serrate. — Upper districts, in rocky woods.

* * *Stems leafy from the base; flowers purple; stipules fringed (except No. 15).*

12. **V. canina,** L. Primary stems erect, the later ones prostrate; leaves broadly cordate or reniform, crenate and roughened with minute elevated points, the uppermost acute; spur obtuse, half as long as the pale purple petals; lateral petals bearded. — Damp shades in the upper districts.

Var.? **multicaulis,** Torr. & Gray. Stoloniferous; primary stems none, the peduncles rising from the rootstock and the axils of the leafy stolons; leaves orbicular-cordate, crenulate, ½′–1′ long; flowers pale purple, ½′ wide. — Dry rocky woods, mostly in the upper districts.

13. **V. Thompsonæ,** n. sp. Stoloniferous, nearly glabrous; leaves orbicular-cordate, finely crenate, membranaceous, 2′–2½′ long; stipules lanceolate, acuminate, slightly ciliate; sepals oblong-ovate, as long as the rostrate spur; petals purple, beardless; capsule globose-ovate, glabrous. — Shady banks of streams, Smithville, Georgia (*Mrs Sarah Thompson*). April. — Habit of the preceding variety, with the foliage of No. 1.

14. **V. rostrata,** Pursh. Stems numerous, ascending (3′–6′ long); leaves cordate, serrulate; stipules large; spur straight, slender, longer than the pale purple beardless petals; stigma beakless. — Mountains of Georgia and Alabama.

15. **V. striata,** Ait. Stems ascending; leaves cordate, serrate, roughened as in No. 12, the uppermost often acute; stipules large; spur thick, shorter than the large cream-colored petals; lateral petals bearded, the lower striped with purple. — Mountains of Georgia and Tennessee. April. — Stems 10′ – 12′ high. Peduncles elongated.

16. **V. Canadensis,** L. Tall; leaves large, broadly cordate, acuminate, coarsely serrate, longer than the peduncles; stipules nearly entire; spur very short; petals white, externally purplish, the lateral ones bearded. — Rich soil along the mountains. May – August. — Stems 1° – 2° high.

§ 3. *Stems leafy; root annual.*

17. **V. tricolor,** L., var. **arvensis,** DC. Stems branching; lowest leaves roundish, the upper lanceolate, entire; stipules leafy, pinnatifid; flowers small, yellow and purple. — Open woods and waste places, perhaps indigenous. — Stem 6′ high.

2. SOLEA, Ging.

Sepals not produced at the base. Petals unequal, the lowest one gibbous at the base and 2-lobed at the apex, the others smaller. Stamens with the filaments united and produced above the anthers, the two lower ones glandular at the base. Style hooked at the summit. — An upright simple hairy perennial herb, with numerous ovate-lanceolate, acuminate and entire leaves, and 1 – 3 short-stalked greenish nodding flowers in each axil.

1. **S. concolor,** Ging. — Rich soil in the upper districts, in deep shades. June – July. — Stem 1° – 2° high. Leaves short-petioled.

ORDER 14. CISTACEÆ. (ROCK-ROSE FAMILY.)

Herbs or low shrubs, with entire leaves, and regular mostly polyandrous flowers. — Sepals 5, persistent, the two outer ones smaller, the three inner twisted in the bud. Petals mostly 5, twisted contrary to the sepals in the bud, rarely wanting. Stamens few or numerous, distinct, hypogynous. Anthers innate. Ovary 1-celled. Style single. Capsules 3 – 5-valved, bearing as many parietal placentæ each in the middle of the valve, few- or many-seeded. Seeds orthotropous. Embryo curved, in mealy albumen.

Synopsis.

1. **HELIANTHEMUM.** Style none. Stigma capitate. Embryo nearly annular.
2. **LECHEA.** Style none. Stigmas plumose. Embryo nearly straight.
3. **HUDSONIA.** Style filiform. Stigma minute. Embryo coiled.

1. HELIANTHEMUM, Tourn. ROCK-ROSE.

Petals 5, corrugated in the bud, sometimes wanting. Stigma sessile or nearly so, capitate, 3-lobed. Capsule 3-valved. Embryo curved nearly into a ring. — Low herbs or partly shrubby plants, with fugacious yellow flowers.

* *Flowers alike, solitary: petals conspicuous: stamens indefinite: capsule many-seeded.*

1. **H. Carolinianum,** Michx. Hirsute; leaves lanceolate, denticulate, acute, short-petioled, the lowest obovate, crowded; flowers large, solitary, borne above the axils. — Dry sandy soil, Florida to North Carolina and westward. March – April. — Stems 6′ – 12′ high, ascending from a shrubby base. Flowers 1′ wide.

2. **H. Georgianum,** n. sp. Tomentosa; stem 6′ – 9′ high, much branched from near the base; leaves lanceolate, flat, or the margins slightly revolute, 6″ – 9″ long; flowers all single and opposite the leaves, or the uppermost racemose, the slender pedicels 2 – 3 times as long as the calyx; petals 3″ – 4″ long. — Fields and pastures. Bainbridge, Georgia, Mobile (*Mohr*). May – June.

3. **H. arenicola,** Chapm. Hoary; leaves small, lanceolate, obtuse, entire, with the sides revolute; flowers solitary, or 2 – 4 in terminal umbellate clusters, on slender pedicels. — Drifting sands near the coast, West Florida. March – April. — Stems shrubby and branched at the base, all but the short (2′ – 6′) flowering stems buried in the sand. Flowers ½′ wide.

* * *Flowers of two kinds: the earliest as in the last section, the later ones smaller, clustered, with small petals, or none, fewer stamens, and few-seeded capsules.*

4. **H. corymbosum,** Michx. Tomentose and hairy; stems erect, shrubby at the base; leaves lanceolate, obtuse, entire, hoary beneath, with the sides revolute; flowers nearly sessile in a cymose cluster at the summit of the stem, the earlier ones long-peduncled; sepals woolly. — Dry sands near the coast, Florida to North Carolina. April. — Stems 1° high. Capsule smooth.

5. **H. Canadense,** Michx. Stem soon branching above, tomentose, and sparsely pilose; leaves lanceolate, mostly obtuse, short-petioled, rather scabrous above, canescent-tomentose beneath, the margins revolute; primary flowers large (1′ wide), solitary, the calyx pilose, later ones very small, clustered, tomentose. — Dry soil in the middle districts. April. — Stem 6′ – 12′ high. Leaves 9″ – 12″ long.

6. **H. rosmarinifolium,** Pursh. Tomentose; stem strictly erect, simple below, with short flowering branches above, 10′ – 15′ high, leaves linear, 1′ long, the margins revolute; earlier flowers single, long-pedicelled, ½′ wide, the later in axillary clusters, ⅛″ long. — Louisville, Georgia (*M. H. Hopkins*, whose observations on this genus have afforded me valuable aid).

2. LECHEA, L. PINWEED.

Petals 3, persistent, not longer than the sepals. Stamens 3 – 12. Stigmas 3, plumose, sessile. Capsule oval or globose, 3-valved, incompletely 3-celled, 3 – 6-seeded. Embryo slightly curved. — Perennial herbs branching above, and later at the base in the form of barren leafy shoots, with entire leaves, and small mostly greenish flowers in panicled bracted racemes.

§ 1. *Placentæ fragile, separating from the partitions, and wrapped around the seeds.* — LECHEA.

* *Leaves of the barren shoots oblong or oval.*

1. **L. major,** Michx. Stem 1° – 2° high, the branches and barren shoots villous; leaves oblong-lanceolate, the lower and those on the barren shoots opposite or whorled; racemes short, closely 2 – 6-flowered, these longer than their pedicels. — Dry light soil. Common.

2. **L. thymifolia,** Michx. Stem 1° – 2° high, the erect branches very numerous and leafy; leaves lanceolate, of the barren shoots elliptical, opposite or whorled; racemes leafy, 3 – 5-flowered; outer sepals longer than the ovoid capsule. — Dry sandy soil. July.

3. **L. racemulosa,** Michx. Stem 1° – 2° high, the slender branches spreading; leaves alternate, linear; of the barren shoots oblong; racemes very slender, partly bractless, 3 – 6-flowered; outer sepals shorter than the oblong capsule. — South Carolina and westward. July.

4. **L. patula,** Leggett. Stems 6′ – 12′ high, widely branched; leaves linear, 2″ – 3″ long, of the ascending barren shoots oblong; racemes short, 2 – 5-flowered; flowers very small, diœcious; sepals equal; capsule 1-seeded. — Dry sandy pine barrens, Florida to South Carolina. August.

* * *Leaves of the barren shoots linear.*

5. **L. tenuifolia,** Michx. Stems clustered, 6′ – 12′ high, the branches spreading; leaves linear; racemes very slender, 5 – 12-flowered; pedicels erect, shorter than the globular flowers; outer sepals longer than the 1-nerved inner ones; capsule globose. — Dry sandy soil. July – August.

6. **L. cinerea,** Raf. Canescent, 1° – 1½° high, branching above; leaves erect, linear; racemes loosely 3 – 5-flowered; sepals villous, the outer ones shorter; capsule 3-seeded. — Florida, near the coast, in damp soil. August.

Var. **Torreyi.** Leaves and branches spreading or recurved; capsule 6-seeded. (L. Torreyi, *Leggett.*) — South Florida.

§ 2. *Placentæ firm, scarcely recurved, adhering to the persistent partitions.* — LECHIDIUM.

7. **L. Drummondii,** Torr. & Gray. Stem branching at the base, 6′ – 8′ high; leaves scattered, narrow-linear; racemes loosely few-flowered, the spreading or reflexed pedicels much longer than the flowers; petals purple; stamens 10 or more; capsule globose. — Barrens of Tennessee, and westward.

3. HUDSONIA, L.

Petals 5, larger than the sepals, fugacious. Stamens 9 – 30. Style filiform. Stigma minute. Capsule oblong, 1-celled, 3-valved, with 2 – 6 erect seeds attached near their base. Embryo coiled. — Low tufted shrubs, with minute hoary subulate imbricated leaves, and yellow flowers at the summit of the branches.

1. **H. montana,** Nutt. Stems 2′ – 4 high; leaves loosely imbricated; pedicels longer than the flowers; calyx campanulate; sepals acuminate. — Table Rock, North Carolina.

2. **H. ericoides,** L. Hoary-pubescent; stem erect, 6′ high; leaves subulate, erect, or loosely imbricated; peduncles about as long as the flowers; sepals barely acute; capsule pubescent, mostly 3-seeded. — Coast of North Carolina, and northward. May.

3. **H. tomentosa,** Nutt. Tomentose, intricately branched, 6′ high; leaves minute, ovate-lanceolate, closely imbricated; flowers nearly sessile; sepals obtuse, the outer ones minute; capsule smoothish, mostly 1-seeded. — Coast of North Carolina, and northward. May.

ORDER 15. PORTULACACEÆ. (PURSLANE FAMILY.)

Succulent plants, with entire leaves and regular hypogynous or perigynous flowers. Sepals 2 – 5. Petals 3 – 6, imbricated in the bud, sometimes wanting. Stamens as many as the petals and opposite them, or indefinite. Styles 3 – 6, mostly united below, stigmatic along the inside. Capsule 1 – 5-celled, few – many-seeded. Seeds campylotropous, erect from the base of the cell, or attached to a central placenta. Embryo slender, curved around mealy albumen.

Synopsis.

1. **CLAYTONIA. Petals and stamens 5. Capsule 3-valved, 3 – 6-seeded.**
2. **TALINUM. Petals 5. Stamens 10 – 30. Capsule 3-valved, many-seeded.**
3. **PORTULACA. Petals 5 – 6. Stamens 8 – 20. Capsule circumscissile.**

1. CLAYTONIA, L. SPRING-BEAUTY.

Sepals 2, free, persistent. Petals 5, hypogynous. Stamens 5, inserted on the claws of the petals. Style 3-cleft. Capsule 1-celled, 3-valved, 3 – 6-seeded. — Smooth herbs, with a simple stem bearing two opposite leaves and terminated with a loose raceme of pale rose-colored veiny flowers. Root tuberous.

1. **C. Virginica,** L. Leaves long (3′ – 6′), linear, acutish; petals mostly emarginate, but sometimes acute. — Damp rich soil in the upper districts. March. — Plant 4′ – 10′ long.

2. **C. Caroliniana,** Michx. Leaves short (1′ – 2′), ovate-lanceolate or oblong, tapering at the base, obtuse; petals obtuse. — Mountains of North Carolina. March – April. — Smaller than the last.

2. TALINUM, Adans.

Sepals 2, free, deciduous. Petals 5, hypogynous. Stamens 10 – 30. Style 3-lobed. Capsule 3-celled at the base, 3-valved, many-seeded. — Smooth and fleshy herbs, with alternate leaves and cymose flowers.

1. **T. teretifolium,** Pursh. Stem thick, leafy; leaves linear-cylindrical; cymes on long peduncles; petals purple, fugacious. — Rocks, North Carolina. June – August. ♃ — Stems 2′ – 4′ long. Peduncles 5′ – 8′ long.

3. PORTULACA, Tourn. PURSLANE.

Sepals 2, united and cohering with the ovary below, the upper portion circumscissile and deciduous with the upper part of the capsule. Petals 4 – 6, inserted with the 8 – 20 stamens on the calyx. Style 3 – 8-parted. Capsule globose, 1-celled, many-seeded. — Low, fleshy herbs, with terete or flat, mostly alternate leaves, and fugacious yellow or purple flowers.

1. **P. oleracea,** L. Leaves flat, cuneate, naked in the axils; flowers yellow; stamens 10 – 12. — Cultivated ground everywhere. — Stem prostrate.

2. **P. pilosa,** L. Stem mostly prostrate and diffusely branched; leaves linear, woolly in the axils; flowers clustered, purple; stigmas 4; stamens 10 – 15. — Waste ground. Introduced.

3. **P. halimoides,** L. Stem thick, erect (3′ – 6′ high), branching; leaves terete, woolly in the axils; flowers few, in a terminal cluster, immersed in wool, and surrounded by a whorl of short subulate bracts; petals 4 – 6, yellow; stamens 8 – 12. — Shell-Hummocks at Sarasota Bay (*Garber*).

ORDER 16. CARYOPHYLLACEÆ. (PINK FAMILY.)

Herbs with tumid joints, entire opposite or whorled, often connate leaves, and regular hypogynous or perigynous cymose flowers. Stipules dry and scarious, or none. — Sepals 4 – 5, imbricated in the bud, persistent. Petals 4 – 5. Stamens as many as the sepals and opposite them, or twice as many, or by abortion fewer. Ovary free, 1 – 5-celled, with the amphitropous or campylotropous ovules attached to a central placenta. Styles 2 – 5, distinct or partly united, stigmatic along the inner side. Fruit valvate, 1 – many-seeded. Embryo curved, or forming a ring around mealy albumen.

Synopsis.

TRIBE I. **SILENEÆ.** Sepals united into a tube. Petals and stamens inserted on the stipe of the ovary. — Stipules none.

1. SILENE. Styles 3. Capsule 6-toothed.
2. SAPONARIA. Styles 2. Capsule 4-toothed.
3. AGROSTEMMA. Styles 5. Capsule 5-toothed.

TRIBE II. **ALSINEÆ.** Sepals separate or nearly so. Stamens inserted at the base of the sessile ovary. — Stipules none.

* Valves of the capsule as many as the styles.

4. SAGINA. Styles and valves 4 – 5.
5. ALSINE. Styles and valves 3.

* * Valves or teeth of the capsule twice as many as the styles.

6. ARENARIA. Valves of the capsule 2 – 4, each soon 2-cleft. Petals entire.
7. STELLARIA. Valves of the capsule 6 – 10. Petals 2-cleft.
8. CERASTIUM. Capsule 8 – 10-toothed.

Tribe III. **SPERGULEÆ.** Sepals separate. Ovary sessile. Leaves stipulate.

+ Leaves opposite.

9. STIPULICIDA. Stem-leaves minute; the lowest spatulate. Flowers in terminal clusters.

10. **SPERGULARIA.** **Leaves all linear. Flowers solitary, axillary.**

+ + **Leaves whorled.**

11. **SPERGULA.** **Styles 5. Stamens 5 - 10. Capsule 5-valved.**
12. **POLYCARPON.** **Styles 3. Stamens 3 - 5. Capsule 3-valved.**

1. SILENE, L. CATCHFLY.

Sepals united into a 5-toothed tube. Petals 5, long-clawed, inserted with the 10 stamens on the stipe of the ovary, commonly crowned with two scales at the base of the limb. Styles 3. Capsule 1-celled, or 3-celled at the base, opening by 6 teeth, many-seeded. — Leaves mostly connate. Flowers cymose, often showy

* *Perennials: flowers showy.*

+ *Petals gash-fimbriate, crownless.*

1. **S. stellata,** Ait. Leaves in whorls of four, lance-ovate, acuminate, the uppermost opposite; flowers white, in a large spreading panicle; calyx inflated, bell-shaped. — Dry woods in the upper districts, and northward. June - August. — Stems 2° - 3° high, downy, branching above.

2. **S. ovata,** Pursh. Rough-pubescent; leaves large (4′ - 5′), opposite, oblong-ovate, acuminate; flowers white, in a contracted lanceolate panicle; calyx tubular. — Mountains of Georgia and Carolina. July. — Stems stout, 2° - 4° high.

3. **S. Baldwinii,** Nutt. Villous; stems low, slender, bearing runners at the creeping base; leaves opposite, spatulate; the upper ones oblong, sessile; cymes few-flowered; flowers very large, white or pale rose-color, on slender pedicels; calyx tubular — Low shady woods, Georgia and Florida. April - May. — Stems 6′ - 12′ high. Leaves thin. Flowers 2′ wide.

+ + *Petals emarginate or 2-cleft, crowned.*

4. **S. Virginica,** L. Clammy-pubescent; leaves abruptly pointed, the lowest ones clustered, spatulate-obovate, on fringed petioles, the upper small, remote, lanceolate, sessile; cymes loosely few-flowered; calyx tubular-club-shaped, oblong and nodding in fruit; petals crimson, lanceolate. — Rich open woods, chiefly in the upper districts. June - July. — Stems 1° - 2° high. Flowers 1′ wide.

5. **S. regia,** Sims. Viscid-pubescent and roughish; stem tall (3° - 4°) and erect, branched above; leaves ovate, the upper ones acuminate; flowers bright scarlet, short-stalked, clustered and forming a strict panicle; calyx long, cylindrical, striate, dilated in fruit; petals oblanceolate; stamens and style exserted. — Upper districts of Georgia and westward. July.

6. **S. rotundifolia,** Nutt. Hairy and viscid; stems weak, decumbent, branched; leaves thin, roundish, abruptly acuminate at each end, the lowest obovate; flowers few, large, bright scarlet; calyx cylindrical; petals 2-cleft, with the lobes cut-toothed. — Shady rocky banks, Alabama and Tennessee. June - August. — Stems 2° long. Flowers showy.

7. **S. Pennsylvanica,** Michx. Clammy-pubescent; stems low, clustered; lowest leaves spatulate-obovate, the upper lance-oblong, mostly obtuse;

cymes dense-flowered; calyx club-shaped, erect; petals white or rose-color, obovate, emarginate or entire. — Rocky hills, chiefly in the upper districts. March – April. — Stems 6′ – 12′ high.

8. **S. nivea,** DC. Glabrous or nearly so; stem slender, 2° – 3° high; leaves distant, lanceolate, acuminate, nearly sessile, 2′ – 4′ long; cymes few-flowered; calyx cylindrical, at length inflated; flowers white. — Mountains of East Tennessee, and westward. July.

* * *Annuals: flowers small, crowned, expanding at night.*

9. **S. Antirrhina,** L. Stem slender, smoothish, clammy below the upper joints; leaves linear, acute, sessile, the lowest lanceolate, narrowed into a petiole; flowers panicled; calyx smooth; petals obcordate, rose-colored. — Dry old fields. May – June. — Stems 6′ – 2° high, simple or branched.

10. **S. quinquevulnera,** L. Hairy; stem branching; leaves spatulate, the upper ones linear; flowers in 1-sided racemes; calyx hairy; petals rounded, entire, pink or crimson with a paler border. — Near Charleston. Naturalized. — Stem 1° high.

2. SAPONARIA, L. Soapwort.

Calyx tubular, terete, 5-toothed. Petals long-clawed. Stamens 10. Styles 2. Capsule sessile or short stiped, 1-celled, or 2-celled at the base, 4-toothed at the apex. — Cymes dense-flowered.

1. **S. officinalis,** L. Perennial; stems stout, erect, smooth; leaves ovate, connate, strongly 3-ribbed; petals crowned, white or rose-color, mostly double. — Waste places. Naturalized. — Stems 1° – 2° high.

3. AGROSTEMMA, L. Corn-Cockle.

Calyx tubular, with 5 elongated linear deciduous lobes. Petals 5, entire, crownless. Stamens 10. Styles 5. Capsule 1-celled, 5-toothed. — Annual or biennial pubescent herbs, with linear leaves, and showy purple flowers on elongated peduncles.

1. **A. Githago,** L. Plant (1° – 2° high) whitened with long appressed hairs; stem forking; petals obovate, emarginate, shorter than the lobes of the calyx. — Grain fields. Introduced. June – July. ① — Peduncles 4′ – 6′ long. Flowers 1′ wide.

4. SAGINA. L.

Sepals 4 – 5 Petals 4 – 5, entire, or wanting. Stamens 4 – 10. Styles 4 – 5, alternate with the sepals. Capsule 4 – 5-valved; the valves entire, opposite the sepals. — Small herbs, with filiform forking stems, subulate leaves, and solitary flowers.

1. **S. decumbens,** Torr. & Gray. Smooth or nearly so; stems erect or ascending, tufted; peduncles erect; petals and sepals 5, equal, obtuse; stamens 10. — Damp cultivated ground, common. April – June. — Stems 2′ – 6′ high. Peduncles 2 – 3 times as long as the sharp-pointed leaves.

2. **S. procumbens,** L. Stems prostrate; leaves narrow-linear; sepals, petals, and stamens 4; capsule 4-valved. — Wet banks, North Carolina (*Hyams*), and northward.

5. ALSINE, Tourn.

Sepals 5. Petals 5. Stamens 10. Styles 3. Capsule 1-celled, 3-valved, the valves entire, opposite the inner sepals. — Low slender herbs, with linear or subulate leaves, and white cymose or solitary flowers.

1. **A. squarrosa,** Fenzl. Stems tufted; leaves subulate, rigid, those of the glandular flowering stems distant, of the sterile stems imbricated, with spreading tips; sepals ovate, obtuse, shorter than the capsule. — Dry sandhills in the middle districts. April – May. ♃ — Stems 6′ – 10′ high. Cymes few-flowered. Pedicels rigid.

2. **A. glabra,** Gray. Smooth; stems filiform, sparingly branched; leaves tender, narrow-linear, obtuse, spreading; cyme few-flowered, spreading; sepals oblong, obtuse, faintly 3-ribbed, as long as the capsule. — Mountains of North Carolina. July. ♃ ? — Stems tufted, 4′ – 6′ high. Cymes leafy. Pedicels setaceous. Leaves ½′ – 1′ long.

3. **A. Grœnlandica,** Gray. Very near the preceding; stems lower (2′ – 5′ high), mostly simple; cymes less spreading, with fewer and larger flowers; petals wedge-obovate, fully twice as long as the sepals; capsules rather acute. — High mountains of North Carolina. Sept.

4. **A. patula,** Gray. Minutely pubescent; stem filiform, diffusely branched from the base; leaves narrow-linear, spreading; cyme spreading, few – many-flowered; pedicels very slender; petals spatulate, emarginate, twice the length of the lanceolate acute 3 – 5-nerved sepals. — Rocky woods, Tennessee and westward, and sparingly along the coast of Florida and Alabama. — Stems 6′ – 10′ high.

5. **A. Michauxii,** Fenzl. Smooth; stems tufted, erect or diffuse, straight; leaves linear-subulate, erect, spreading or recurved, much clustered in the axils; cymes spreading or contracted; petals oblong-ovate, twice as long as the rigid ovate acute 3-ribbed sepals. (Arenaria stricta, *Michx.*) — Rocks and barren soil, Georgia and North Carolina. May – June. — Stems 3′ – 10′ high.

6. **A. brevifolia.** Stems smooth, not tufted, erect, filiform, simple, 2 – 5-flowered; leaves minute (1″ – 2″), erect, lance-subulate; sepals oblong, obtuse, as long as the capsule; petals twice as long as the sepals. — Rocks in the upper districts of Georgia. ① — Stems 2′ – 4′ long, bearing 3 or 4 pairs of leaves. Flowers small, on filiform peduncles.

6. ARENARIA, L. Sandwort.

Petals 1 – 5, or none. Styles 2 - 4. Capsule opening above by as many valves as there are styles, each valve soon 2-cleft. Otherwise like Alsine.

1. **A. diffusa,** Ell. Downy; stem elongated, prostrate, alternately short-branched; leaves lanceolate; peduncles longer than the leaves, lateral, reflexed in fruit; petals 1 – 5, shorter than the sepals, often wanting. — Shady banks. May – Oct. ♃ — Stems 1° – 4° long.

2. **A. serpyllifolia,** L. Downy; stems erect or diffusely branched; leaves small, ovate, acute, the lowest narrowed into a petiole; flowers cymose; petals much shorter than the lanceolate acuminate sepals. — Waste places. Introduced. April – May. ① — Stems 6′ – 12′ long. Leaves ½′ long.

7. STELLARIA, L. CHICKWEED, STARWORT.

Sepals 4 – 5. Petals 4 – 5, 2-cleft, or 2-parted. Stamens 3 – 10. Styles 3 – 5, opposite the sepals. Capsule 1-celled, opening by twice as many valves as there are styles, many-seeded. — Stems weak. Flowers white, on terminal peduncles, becoming lateral in fruit.

1. **S. pubera,** Michx. Perennial; stems erect or diffuse, forking, hairy in lines; leaves oblong, acutish, narrowed at the base, sessile; petals longer than the sepals. — Rocky woods in the upper districts. April – May. — Stems 6′ – 12′ high. Flowers showy.

2. **S. media,** Smith. Annual; stems prostrate, forking, pubescent in lines; leaves ovate or oblong, acute, the lower ones petioled; petals shorter than the sepals — Yards and gardens. March – April. Introduced.

3. **S. prostrata,** Baldw. Smooth or nearly so; stems forking, prostrate; leaves ovate, acute, all on slender petioles, the lower ones often cordate; petals twice as long as the sepals; seeds rough-edged. — Damp shades, Georgia, Florida, and westward. March – April. ① — Stems 1° – 2° long. Petiole mostly longer than the limb.

4. **S. uniflora,** Walt. Smooth; stems erect from a prostrate base; leaves remote, narrow-linear, sessile; peduncles very long (2′ – 4′), erect; petals obcordate twice as long as the calyx. — River swamps, East Florida to North Carolina. May. ① ? — Stems 6′ – 12′ high. Leaves 1′ long.

5. **S. fontinalis,** Robinson. Stems weak, diffuse (6′ – 12′ long); leaves linear-spatulate or oblong, spreading; peduncles axillary, longer than the leaves; flowers very small, mostly 4-androus; petals none; sepals 3-nerved, acute. (Sagina fontinalis, *Short & Peters.*) — Springy places, Tennessee (*Dr. Gattinger*). April.

8. CERASTIUM, L. MOUSE-EAR.

Sepals 4 – 5. Petals 4 – 5, obcordate or 2-cleft. Stamens 10. Styles 4 – 5. Capsule cylindrical, 8 – 10-toothed, many-seeded. — Herbs. Flowers white, solitary or cymose, peduncled.

* *Petals not longer than the sepals.*

1. **C. viscosum,** L. Villous and somewhat clammy; stems ascending; leaves oval, remote, the lowest obovate; cymes crowded in the bud, spreading in fruit; sepals lanceolate, acute, as long as the peduncles, and half as long as the slender capsule. — Fields. April – May. ① — Stems 6′ – 12′ high.

2. **C. vulgatum,** L. Hairy and clammy; stems ascending; leaves lance-oblong, obtuse, the lowest wedge-shaped; cymes loose in the bud; sepals oblong-ovate, obtuse, shorter than the peduncles. — Fields. April – May. ♃ — Flowers and capsules larger than in No. 1.

* * *Petals longer than the sepals.*

3. **C. arvense**, L. Hairy or downy; stems numerous, naked above; leaves narrowly or broadly lanceolate; cymes rather few-flowered; petals obcordate, twice as long as the oblong sepals. — Rocky or dry soil, chiefly in the upper districts. May – June. ♃ — Stems 6′ – 12′ high. Leaves seldom 1′ long. Flowers ½′ wide. Capsule rather longer than the calyx.

4. **C. nutans**, Raf. Clammy-pubescent; stems tufted, furrowed; leaves lanceolate; cymes ample, many-flowered; petals oblong, emarginate, rather longer than the oblong sepals. — Low grounds in the upper districts. ① — Stems 1° high. Peduncles long. Capsule curved, three times as long as the calyx.

9. STIPULICIDA, Michx.

Sepals 5, emarginate, white margined. Petals 5, spatulate, 2-toothed near the base, longer than the sepals, withering persistent. Stamens 3, opposite the inner sepals. Style very short, 3-parted. Capsule 1-celled, 3-valved, many-seeded. — A small perennial, with an erect forking stem. Stem leaves minute, subulate, with adnate pectinate stipules. Radical leaves spatulate, clustered, growing from a tuft of bristly stipules. Flowers white, in a terminal cluster.

1. **S. setacea**, Michx — Low sandy pine barrens, Florida to North Carolina. April – June. — Stem 3′ – 6′ high, the branches spreading and curving.

10. SPERGULARIA, Pers.

Sepals 5. Petals 5, oval, entire. Stamens 2 – 10. Styles 3 – 5. Capsule 3 – 5-valved; the valves when 5 alternate with the sepals. — A low maritime herb, with opposite fleshy leaves, and conspicuous scarious stipules. Flowers axillary, solitary, rose-colored

1. **S. salina**, Presl. Stems diffusely branched, glandular, 4′ – 6′ high; leaves linear; sepals oblong, about as long as the pedicels; petals red; seeds roundish, roughened with raised points. — Sandy coast. April.

11. SPERGULA, L. SPURRY.

Sepals 5. Petals 5, entire. Stamens 5 or 10. Styles 5. Capsule 5-valved, the valves opposite the sepals. Embryo forming a ring around the albumen. — Leaves whorled. Flowers cymose, white.

1. **S. arvensis**, L. Stem erect; leaves fleshy, narrow-linear, several in a whorl; cyme loose, long-peduncled; fruiting pedicels reflexed; stamens 10; seeds rough. — Cultivated fields. Introduced. ①.

12. POLYCARPON, L.

Sepals 5, carinate Petals 5, emarginate, shorter than the sepals. Stamens 3 – 5. Styles 3, very short. Capsule 3-valved. — Low annuals, with whorled leaves, and minute flowers, in terminal cymes.

1 **P. tetraphyllum**, L. Stems (3′ – 6′) forking, diffuse; leaves spatulate-obovate, the lower ones 4 in a whorl, the upper opposite; sepals acute; stipules conspicuous. — Near Charleston. Introduced. May – June.

ORDER 17. MALVACEÆ. (MALLOW FAMILY.)

Mucilaginous herbs or shrubs, with palmately veined alternate stipulate leaves, and regular monadelphous flowers on jointed peduncles. — Sepals 5, united at the base, valvate in the bud, persistent, often with a calyx-like involucel. Petals 5, convolute in the bud. Stamens numerous, united into a column which is continuous with the claws of the petals; anthers 1-celled, opening transversely. Ovaries united into a ring, or forming a several-celled capsule Styles separate or united. Seeds kidney-shaped. Albumen scarce or none. Embryo large, curved, with leafy cotyledons. Pubescence commonly stellate. Pollen grains hispid.

Synopsis.

TRIBE I. **MALVEÆ.** — Carpels as many as the stigmas, 1-few-seeded, disposed in a circle around a central axis, separating at maturity from the axis and from each other. Anthers borne at the apex of the column.

* Carpels 1-seeded.

+ Stigmas occupying the inner face of the styles.

1. **MALVA.** Carpels beakless. No process within.
2. **CALLIRRHOË.** Carpels beaked, and bearing a dorsal process above the seed within.

+ + Stigmas capitate.

3. **MALVASTRUM.** Involucel 2-3-leaved. Ovule peritropous-ascending. Radicle inferior.
4. **SIDA.** Involucel none. Ovule resupinate-pendulous. Radicle superior.

* * Carpels 2-few-seeded.

5. **ABUTILON.** Carpels 1-celled. Involucel none.
6. **MODIOLA.** Carpels transversely 2-celled. Involucel 3-leaved.

TRIBE II. **URENEÆ.** — Carpels half as many as the stigmas, separating at maturity. Anthers borne above the middle of the column.

7. **PAVONIA.** Involucel 5-15-leaved. Flowers axillary or racemose.
8. **URENA.** Involucel 5-cleft. Flowers racemose. Carpels hispid.
9. **MALACHRA.** Involucel none. Flowers capitate.

TRIBE III. **HIBISCEÆ.** — Carpels as many as the stigmas, united and forming at maturity a loculicidal capsule. Column bearing the anthers throughout, or from above the middle.

10. **KOSTELETZKYA.** Cells of the depressed capsule 1-seeded.
11. **HIBISCUS.** Cells of the globose or oblong capsule few-many-seeded.
12. **THESPESIA.** Capsule indehiscent. Involucel 3-leaved, entire.
13. **GOSSYPIUM.** Capsule dehiscent. Involucel 3-leaved, gashed.
14. **FUGOSIA.** Capsule dehiscent. Involucel of 6-9 subulate leaves.

1. MALVA, L. MALLOW.

Involucel 3-leaved, persistent. Petals obcordate. Styles 9-20, filiform, stigmatic on the inner face. Carpels broadly reniform, beakless, 1-seeded, indehiscent, disposed in a circle around the central axis, from which they separate at maturity. Embryo nearly annular. Radicle inferior. — Herbs. Leaves rounded. Flowers axillary, not yellow.

1. **M. rotundifolia,** L. Stems several, prostrate; leaves long-petioled, round-cordate, crenate and crenately-lobed; flowers single or clustered, white veined with purple; carpels even. — Around dwellings. Introduced. ♃.

2. **M. sylvestris,** L. Hirsute, erect, 2°-3° high; leaves sharply serrate, 5-7-lobed; flowers long-peduncled, 2′ wide, bright purple; carpels wrinkled. — Waste ground. Introduced. June.

2. CALLIRRHOË, Nutt.

Involucel 1-3-leaved and persistent, or none. Petals wedge-shaped, entire, or crenate. Styles as in Malva. Carpels numerous, with a short and naked beak, and a ligulate dorsal process below the beak within. Embryo curved. Radicle inferior. — Perennial herbs. Leaves palmately lobed, or angled. Flowers showy, purple or whitish.

1. **C. triangulata,** Gray. Rough-pubescent; stem ascending from a perpendicular rootstock, branching above; leaves triangular, coarsely and unequally crenate, the lowest ones long-petioled and cordate, the upper 3-5-lobed; flowers approximate, panicled, longer than the pedicels; involucel 3-leaved, the leaves linear; carpels at length 2-valved. — Dry soil in the upper districts of Alabama to North Carolina. July. — Stem 2°-3° high. Flowers 1′-1½′ wide, purple.

2. **C. Papaver,** Gray. Rough with scattered appressed and rigid hairs; stems low, simple; leaves 3-5-parted; the lobes oblong or lanceolate, toothed or entire; flowers few, solitary, axillary, long-peduncled; involucel 1-3-leaved, or none; petals finely crenate; carpels indehiscent. — Rich open woods, Georgia, Florida, and westward. May-Sept. — Stems 1° high. Flowers purple, 2′ wide, on peduncles sometimes 1° long.

3. **C. alcæoides,** Gray. Strigose-pubescent; stems slender (1° high); lower leaves triangular-cordate, incised; the upper 5-7-parted, laciniate, the uppermost divided into linear segments; flowers corymbose, on slender peduncles (rose-color or white); involucel none; carpels obtusely beaked, crested and strongly wrinkled on the back. — Barren oak lands, Tennessee.

3. MALVASTRUM, Gray.

Involucel 1-3-leaved or none. Styles 5-20. Stigmas capitate. Carpels beaked or beakless, 1-seeded. Seed ascending. Embryo curved or annular. Radicle inferior. — Herbs or shrubby plants, rough with rigid hairs. Flowers yellow.

1. **M. tricuspidatum,** Gray. Perennial or shrubby; stem branching; leaves ovate or oblong-ovate, serrate, acute, petioled; stipules lanceolate; flowers in leafy spiked racemes; petals obliquely truncated; carpels 10-12, more or less distinctly 3-toothed or awned at the apex. — South Florida. — Stems 1° high. Involucel 3-leaved.

2. **M. angustum,** Gray. Annual; stem erect, branching; leaves lanceolate, sparingly serrate, short-petioled; stipules bristle-like; flowers axillary, mostly solitary; involucel setaceous, 2-3-leaved; carpels 5, circular, awnless, at length 2-valved. — Tennessee, and westward. — Stems 6′-12′ high. Calyx enlarged in fruit.

3. **M. Rugelii,** Watson. Stems erect, much branched, stellate-hairy; leaves ovate, coarsely serrate, slender-petioled; flowers axillary, small, sin-

gle, or the upper ones densely spiked; involucel 3-leaved, as long as the very hairy calyx; petals yellow, oblique; carpels 12, even, awnless. — South Florida. — Stems 2°–4° high. Flowers ½′ wide.

4. SIDA, L.

Involucel none. Calyx angular. Styles 5–15. Stigmas capitate. Ovaries 1-celled. Carpels erect, mostly 2-valved and 2-beaked at the apex, separating at maturity from each other, and from the central axis. Seed resupinate, suspended, 3-angled. Embryo curved. Radicle superior. — Branching herbs or shrubs, with chiefly undivided leaves, and small yellow, rarely red or white, flowers in their axils.

* *Leaves, at least the lower ones, cordate.*

+ *Flowers diœcious, white.*

1. **S. Napæa,** Cav. Nearly smooth, 4°–8° high; leaves thin, long-petioled, cordate-ovate, 5-lobed, acuminate, toothed or serrate; peduncles few-flowered; petals obovate; carpels 10, acuminate. — Shady banks, East Tennessee. June.

+ + *Flowers perfect, yellow or red.*

2. **S. spinosa,** L. Annual, minutely pubescent; branches erect; leaves oblong-ovate, acute, serrate, the slender petioles often with a tubercular spine at the base, the lower ones cordate; stipules setaceous, half as long as the petioles; flowers single or clustered, on short erect peduncles; carpels faintly reticulated, each pointed with two erect subulate spines. — Waste places. July–Sept. — Stems 1°–2° high. Flowers ½′ wide, yellow.

3. **S. supina,** L'Her. Perennial, tomentose; stems divided at the base into slender simple ascending or prostrate branches; leaves all round-cordate, crenate; stipules minute; flowers solitary; the peduncles reflexed in fruit; carpels downy, reticulated, almost beakless. — South Florida. Oct. — Stems 6′–12′ long; leaves ¼′–1′ long. Flowers yellow, not half as large as in the preceding.

4. **S. diffusa,** HBK. Perennial; stems prostrate, hairy, 2° long; leaves ½′ long, cordate-oblong, serrate; stipules setaceous; peduncles 1′ long, solitary; flowers yellow; carpels 5, pubescent, short-beaked. — Keys of South Florida.

5. **S. cordifolia,** L. Annual, villous; stem tall, much branched; leaves ovate, cordate, entire or angularly 3-lobed, crenate-serrate; flowers small, yellow, mostly crowded in axillary and terminal racemes; carpels 10–12, shorter than the slender retrorsely scabrous awns. — Cedar Keys, Florida. Introduced. Nov. — Stem 3°–5° high. Leaves 2′–3′ long.

* * *Leaves not cordate.*

6. **S. carpinifolia,** L. Nearly glabrous, erect, branching; leaves ovate-lanceolate, obtuse and 3-nerved at the base, serrate; stipules linear; flowers axillary, the earlier solitary, the later ones clustered; petals yellow, unequally obcordate; carpels 7–12, reticulate-rugose.

Var. **brevicuspidata,** Griseb. Stem 1°–3° high, the branches and leaves mostly distichous; leaves ovate-oblong; flowers 1′ wide, ochroleucous; carpels 10, short-beaked. (S. stipulate, *Cav. & Flora*). — Around homesteads in the lower districts. July – Sept.

Var. **parviflora.** Stem 2° – 3° high, with numerous long and virgate branches, pubescent; leaves ovate-oblong; flowers ½′ wide, orange-yellow; carpels 7, short-beaked. — Roberts Key, in Caximbas Bay. South Florida. July – August.

Var. **acuta.** Stem 3° – 6° high, short-branched; leaves lanceolate or oblong; peduncles longer than the petioles; flowers 1′ – 1½′ wide, golden yellow; carpels 10 – 12, slender-beaked. (S. acuta, *Burm.*) — Sandy coast of South Florida. August – Sept.

7. **S. rhombifolia,** L. Downy; stems erect, much branched; leaves rhombic-oblong, obtuse at each end, serrate, short-petioled, pale beneath; stipules setaceous, longer than the petioles, caducous; peduncles solitary, more than half as long as the leaves; carpels 10 – 12, even, pointed with a single subulate spine, indehiscent. — Around dwellings, Florida to North Carolina, and westward. July – Oct. ① — Stems 2° – 3° high. Leaves 2′ – 3′ long. Flowers yellow.

8. **S. ciliaris,** Cav. Rough with appressed rigid hairs; stems prostrate; leaves elliptical, obtuse at both ends, serrate above the middle, smooth above, the uppermost approximate; stipules setaceous, and like the calyx fringed with long hairs; flowers nearly sessile in the axils of the upper leaves; carpels 7, strongly reticulated, pointed with two minute barbed spines. — Key West. ♃ — Stems 6′ long. Leaves ½′ – 1′ long. Flowers small, red.

9. **S. Elliottii,** Torr. & Gray. Perennial; stems slender, roughish, erect, with long and straight branches; leaves smoothish, lanceolate or linear, acute, serrate, on short petioles; stipules setaceous; flowers large, single; peduncles longer than the petioles; carpels 10 – 12, strongly reticulated, truncate or slightly 2-pointed. — Open woods, Florida to North Carolina and westward. July – Oct. — Stems 1° – 3° high. Leaves 1′ – 2′ long. Flowers 1′ wide, yellow.

Var. **parviflora.** Stem shrubby, smooth; leaves narrow-linear, obtuse, downy beneath; peduncles as long as the leaves; petals barely longer than the calyx. — Key West (*Blodgett*).

5. ABUTILON, Tourn. INDIAN MALLOW.

Involucel none. Stigma capitate. Ovaries 5 or more, 1-celled, 2 – 9-ovuled. Carpels 1 – 6-seeded, partly 2-valved, tardily separating from each other or from the central axis. Radicle ascending. — Leaves cordate. Flowers yellow, white, or purplish.

1. **A. Avicennæ,** Gærtn. Tomentose; leaves round-cordate, acuminate, crenate; peduncles axillary, 1 – 3-flowered, shorter than the long petioles; carpels 12 – 14, hairy, inflated, truncate, 3-seeded, with two long and spreading spines. — Waste places chiefly in the middle and upper districts. Introduced. ① — Stem 2° – 5° high. Leaves 4′ – 6′ wide. Flowers orange-red.

2. **A. permolle,** Don. Stem erect (2° – 3°), branching, smooth or soft-downy; leaves long-petioled, cordate or oblong-cordate, acuminate, unequally crenate, velvety on both surfaces and hoary beneath, or roughish above; peduncles solitary in the upper axils, 1-flowered, about the length of the petioles, or the upper ones longer; lobes of the calyx ovate or oblong, shorter than the yellow petals; carpels 8 – 10, rigid, hairy, longer than the calyx acute or beaked, 3-seeded. — South Florida. — Flowers 9″ – 12″ wide.

3. **A. pedunculare,** HBK. Shrubby, velvety-tomentose; leaves long petioled, round-cordate, acuminate, crenate, canescent beneath; peduncles axillary, as long as the petioles; calyx-tube plicate; petals "rose-color," reflexed, twice as long as the calyx; carpels about 20, mucronate, villous, 3 – 9 seeded. — South Florida (*Miss Reynolds*). — Stem 2° – 6° high. Petals 10″ long.

4. **A. Indicum,** Don, var. **hirtum,** Griseb. Stem pilose, 2° – 4° high; leaves cordate, acuminate, unequally-toothed, villous above, white-velvety beneath; peduncles 1-flowered; corolla orange-yellow, the centre dark brown, twice as long as the calyx; carpels 10 or more, as long as the calyx, acuminate, pilose, 3 – 9-seeded; seeds warty. — Coast and Keys of South Florida.

5. **A. crispum,** Gray. Hoary-tomentose; stem erect, the lower branches long and trailing; leaves round-cordate, acuminate, finely crenate; peduncles axillary, 1-flowered, elongated, filiform, refracted after flowering; carpels 10, beakless, inflated, corrugated, hispid, 2 seeded. — South Florida. — Stem slender, 1° – 2° high. Leaves 1′ – 2′ long, the upper ones nearly sessile. Peduncles as long as the leaves. Flowers 4″ – 6″ wide, yellow.

6. MODIOLA, Mœnch.

Involucel 3-leaved, persistent. Stamens 10 – 20. Ovaries 14 – 20, transversely 2-celled, each cell 1-ovuled. Stigmas capitate. Carpels 2-valved, 2-seeded, separating at maturity from each other and from the central axis, each valve tipped with a slender spine. — Prostrate herbs, with palmately divided leaves, and small axillary flowers.

1. **M. multifida,** Mœnch. Hirsute; stems diffuse; leaves long-petioled, cordate-ovate, more or less deeply 5 – 7-parted; the divisions lobed and toothed; peduncles longer than the petioles; carpels hispid. — Waste places, Florida to North Carolina and westward. July – Oct. ♃ — Sems 1° – 2° long. Earliest leaves orbicular, undivided. Petals red, as long as the calyx.

7. PAVONIA, Cav.

Involucel 5 – 15-leaved, persistent. Ovaries 5, 1-celled, 1-ovuled. Stigmas 10, capitate. Carpels indehiscent or somewhat 2-valved, naked or armed at the apex with three hispid awns, separating at maturity. Embryo incurved. Radicle inferior. — Chiefly shrubs, with petioled stipulate leaves, and solitary flowers on axillary peduncles.

1. **P. Lecontei,** Torr. & Gray. Stem much branched, roughish-pubescent; leaves ovate or somewhat sagittate, obtusely toothed, densely pubescent

and hoary beneath, rough above, longer than the petioles; involucel of 5–6 ovate leaves, which are slightly united at the base; carpels obovate, awnless, strongly reticulate. — South Georgia (*Leconte*). — Stem 4°–5° high. Leaves 1′ long. Flowers large, pale red.

2. **P. racemosa,** Swartz. Shrubby, tomentose, sparingly branched; leaves petioled, cordate-ovate, acuminate, slightly serrate, 3-nerved; stipules subulate, deciduous; racemes terminal, leafless, few-flowered; involucel 8-leaved; petals twice as long as the calyx, convolute, "dull white tinged with yellow"; stigmas sessile, "carpels unarmed." — Miami and Key Biscayne (*Garber*, *Curtiss*). — Stem 6°–8° high.

3. **P. spinifex,** Willd. Shrubby, hirsute; leaves long-petioled, oblong-ovate or cordate, coarsely serrate; flowers long-peduncled; involucel 8-leaved, longer than the calyx, shorter than the yellow corolla; carpels armed with three stout retrorsely bearded spines. — Charleston (*Rev. Dr. Bachman*). Mayport, Florida (*Curtiss*). Introduced. — Stem 3°–5° high. Corolla 1′ wide.

8. URENA, L.

Involucel deeply 5-cleft. Calyx 5-parted. Petals oblique. Column short; anthers few, terminal. Stigmas 10, capitate, capsule separating into 5 bristly-barbed 1-seeded carpels. — Branching shrubs.

1. **U. lobata,** L. Stem stout, tomentose; leaves roundish, slightly cordate, entire or obscurely 3–5-lobed, canescent beneath; flowers small, axillary, and crowded in a terminal raceme; leaves of the involucel 5–7, subulate; petals pale rose-color; carpels densely bristly. — Waste places. Introduced.

9. MALACHRA, L.

Flowers capitate, surrounded by a 3–5-leaved involucre. Leaves of the involucel 8–12, linear or setaceous. Stigmas 10, capitate. Capsule separating into five 1-seeded carpels. — Herbs or shrubs, rough with rigid, often stinging hairs. Flowers white or yellow.

1. **M. capitata,** L. Bristly and tomentose in lines; stem much branched; leaves cordate, obscurely lobed and toothed; peduncles single or 2–3 in a cluster, axillary, 7-flowered; involucre 3-leaved, córdate; petals twice as long as the calyx, yellow; capsule glabrous. — Key in Chuckolusky Bay, South Florida (*Curtiss*). — Stem 3°–5° high.

10. KOSTELETZKYA, Presl. (Hibiscus, L. in part.)

Capsule depressed, the cells 1-seeded. — Otherwise as in Hibiscus.

1. **K. Virginica,** Presl. Rough-hairy; stem erect, stout, branching; lower leaves ovate, cordate, serrate, mostly 3-lobed, the upper narrower and usually entire; flowers (purple) in terminal racemes. — Var. ALTHEÆFOLIA. Densely stellate-pubescent and somewhat hoary; leaves all undivided, ovate or ovate-lanceolate, acuminate, unequally toothed-serrate; racemes dense-flowered; capsule hirsute. — Marshes, near the coast, the var. South Florida July – August.

2. **K. smilacifolia,** Chapm. Stem slender, the lower branches long (2° – 3°) and trailing; leaves small, the lowest ovate, the others hastate – 3-lobed, with the middle lobe lanceolate, serrate; racemes loosely few-flowered; corolla rose-color, 2′ wide; column interruptedly antheriferous; capsule hirsute. (Hibiscus, *Shuttlw.*) — Low pine woods, South Florida.

11. HIBISCUS, L. Rose-Mallow.

Involucel many-leaved or many-cleft, and, like the calyx, persistent. Stigmas 5, peltate or capitate. Capsule globose or oblong, 5-celled, loculicidally 5-valved, many-seeded. — Herbs, shrubs, or trees, with petioled stipulate leaves, and large showy flowers, on axillary peduncles.

* *Leaves of the involucel forked.*

1. **H. aculeatus,** Walt. Muricate-hispid; leaves round-cordate, divided into 3 – 5 coarsely toothed and spreading lobes, the upper ones narrower and mostly entire; flowers yellow, with a purple centre, short-peduncled; involucel 10 – 12-leaved; capsule hispid; seeds smooth. — Margins of swamps and ponds, South Carolina, and westward. July. ♃ — Stems 2° – 6° high. Flowers 4′ wide.

2. **H. furcellatus,** Desrous. Shrubby; stem tall, branching, tomentose; leaves cordate, entire, finely serrate, rough above; tomentose beneath; leaves of the involucel 10, forked; calyx hispid; corolla yellow (3′ long); capsule strigose; seeds smooth. — Eastern shore of South Florida (*Curtiss*).

* * *Leaves of the involucel entire.*

+- *Perennial herbs: stipules deciduous.*

3. **H. Moscheutos,** L. Tomentose; leaves broadly ovate, acuminate, toothed-serrate, mostly 3-lobed above the middle, rounded or slightly cordate at the base, hoary beneath; peduncles often partly adnate to the petioles; flowers white or pale rose-color with a crimson centre; seeds smooth. — Ponds and marshes. July. — Stems 3° – 5° high. Leaves 3′ – 5′ long. Flowers 4′ – 5′ wide.

4. **H. incanus,** Wendl. Leaves lanceolate and ovate-lanceolate, not lobed, slightly cordate, acuminate, finely serrate, hoary on both sides; flowers pale yellow with a crimson centre, often umbelled; peduncles mostly free from the petioles; capsule and seeds smooth. — Ponds and marshes, Florida to South Carolina. June – July. — Stems 2° – 5° high. Leaves 3′ – 6′ long. Flowers 6′ – 8′ wide.

5. **H. grandiflorus,** Michx. Tomentose; leaves round-ovate, cordate, mostly 3-lobed, toothed-serrate, hoary beneath; flowers very large, pale rose-color with a deep red centre; peduncles free from the petioles; capsule velvety; seeds smooth. — Marshes near the coast, Florida, Georgia, and westward. July. — Stems several from one root, 3° – 5° high. Leaves 4′ – 6′ long and nearly the same in width. Flowers 10′ – 12′ wide.

6. **H. Carolinianus,** Muhl.? Ell. Smooth; leaves cordate-ovate, acuminate, serrate, sometimes slightly 3-lobed; flowers purple; peduncles slightly adhering to the petioles; seeds hispid. — On Wilmington Island,

Georgia. July – Sept. — Stems 4° – 6° high. Leaves 4′ – 6′ long. Flowers 6′ – 8′ wide. (*)

7. **H. militaris,** Cav. Smooth; leaves thin, on long and slender petioles, serrate, slightly cordate, the lower ones roundish, 3 – 5-lobed, the upper ovate-lanceolate, entire or somewhat hastate, with rounded lobes; peduncles shorter than the petioles; calyx inflated; corolla tubular-campanulate, pale rose-color with a red centre; seeds silky. — River banks in the upper districts. July – August. — Stems 3° – 4° high. Leaves 3′ – 5′ long. Corolla 2½′ long.

8. **H. coccineus,** Walt. Smooth; stem glaucous; leaves long-petioled, 5-parted to the base, the lobes lanceolate, remotely toothed, with long-tapering entire tips; corolla expanding, bright scarlet; petals long-clawed; seeds pubescent. — Deep marshes near the coast, Georgia, and westward. July – August. — Stems 4° – 8° high. Leaves 6′ – 12′ long. Corolla 6′ – 8′ wide. Column of stamens naked below.

9. **H. semilobatus**, n. sp. Glabrous; stem simple, 4° – 5° high; leaves 4′ – 6′ long, ovate or roundish, slightly cordate, 3 – 5-lobed above the middle, coarsely serrate, the lateral lobes short or angular, the middle one tapering into a long entire point; petals crimson, obovate, 3′ – 4′ long; column as long as the petals. (H. coccineus, var. *Flora*.) — Marshes near Jacksonville, Florida. June.

++ ++ *Annual herbs: calyx inflated, veiny.*

10. **H. Trionum**, L. (Bladder Ketmia.) Stem 4′ – 12′ high, branching from the base; leaves 3-parted, coarsely toothed; calyx 5-winged; petals yellow, with a black base; capsule hirsute. — Grain fields. Introduced.

++ ++ ++ *Trees or shrubs: stipules persistent.*

11. **H. tubiflorus,** DC. Hispid; leaves small, ovate, obtuse, crenate-serrate, often cordate, and slightly 3-lobed; peduncles longer than the leaves; corolla tubular-campanulate, crimson; column of stamens exserted; seeds woolly. — South Florida. — Shrub 4° – 5° high, branching. Leaves ½′ – 1′ long. Stipules subulate. Flowers 1′ long.

12. **H. tiliaceus,** L. Leaves orbicular-cordate, acuminate, slightly crenate, hoary-tomentose beneath; stipules large, oblong, clasping; involucel 9 – 10-toothed; capsule tomentose; seeds smooth. — South Florida. — A small tree. Leaves 3′ – 4′ long. Flowers yellow.

H. esculentus, L. (H. Collinsianus, *Nutt.?*) is the garden Okra.

H. Syriacus, L., the Althæa, is everywhere cultivated.

12. THESPESIA, Correa.

Involucel 3-leaved. Calyx truncate. Stigmas 5, decurrent. Capsule 5-celled, several-seeded, indehiscent. — Tropical shrubs or trees.

1. **T. populinea,** Correa. Leaves cordate, acuminate, entire; involucel caducous; flowers large, purplish; capsule globose; seeds with villous angles. — Keys of South Florida.

13. GOSSYPIUM, L. COTTON-PLANT.

Involucels 3-leaved, united at the base, incisely lobed and toothed. Calyx cup-shaped, 5-toothed. Stigmas 3 – 5. Capsule 3 – 5-celled, few- or many-seeded. Seeds woolly. — Herbs or shrubs, with palmately lobed leaves, and axillary yellow flowers.

1. **G. hirsutum**, L. Frutescent, hirsute; leaves 3-lobed, or entire, a linear gland on the midrib beneath; flowers 3′ wide; leaves of the involucel cordate, 8 – 10-cleft, with narrow bristle-pointed lobes; capsule 3 – 4-celled, few-seeded. — Thickets along the coast and Keys of South Florida. — Shrub 6° – 12° high.

14. FUGOSIA, Juss.

Involucel 6 – 9-leaved. Column of stamens naked above. Stigmas 3 or 4, separate or united. Capsule 3- or 4-celled, 3- or 4-valved, few- or many-seeded. Seeds woolly. — Shrubby tropical plants, with solitary axillary yellow flowers.

1. **F. heterophylla,** Vent. Smooth, erect; stem angular, branching; leaves lanceolate, obovate, or 3-lobed, 3-nerved; peduncles long, dilated under the flower; leaves of the involucel minute, subulate; calyx dotted with black, the acute sepals 3-ribbed, much shorter than the showy petals; stigmas 3, united; capsule 3-celled, 12 – 20-seeded. — Keys of South Florida. — Stem 12′ – 18′ high. Corolla 1½′ – 2′ wide.

ORDER 18. BYTTNERIACEÆ. (BYTTNERIA FAMILY.)

Chiefly trees or shrubs differing from Malvaceæ in having definite stamens, of which those opposite the petals are usually sterile, 2-celled anthers, with smooth pollen grains, and a straight embryo. — Ovary 3 – 5-celled, rarely 1-celled.

1. AYENIA, L.

Involucel none. Calyx 5-parted. Petals on long capillary claws, connivent over the stigma. Fertile stamens 5, alternating with 1 – 2 sterile ones, their filaments united into a pedicellate cup. Style single. Stigma 5-angled. Capsule 5-lobed, 5-celled, loculicidally 5-valved, the cells 1-seeded. — Low shrubby plants, with minute axillary flowers. Capsule rough. Albumen none.

1. **A. pusilla,** L. Stems mostly simple, prostrate, downy; leaves (4″ – 8″ long) roundish or oblong, coarsely serrate; peduncles solitary, reflexed in fruit; capsule depressed, muricate. — South Florida. ♃ — Stems 6′ – 12′ long. Flowers purple.

2. WALTHERIA, L.

Involucel 3-leaved, deciduous. Calyx 5-cleft. Petals 5, spatulate, convolute in the bud. Stamens 5 united below. Ovary 1-celled, 2-ovuled. Style single. Stigma penicillate or tuberculate. Capsule 2-valved, 1-seeded. Embryo in the axis of fleshy albumen. — Herbs or shrubs, with alternate leaves, and small flowers in axillary clusters.

1. **W. Americana,** L. Stem erect, villous; leaves ovate or oblong, acute or obtuse, serrate, plicate, tomentose on both surfaces; heads of flowers globose, stalked, or subsessile and shorter than the petioles, the upper ones often spiked; calyx hirsute; flowers yellow. — South Florida. — Stem 2° - 3° high, rigid. Leaves 1′ - 2′ long.

3. MELOCHIA, L.

Involucel 3-leaved or none. Calyx 5-cleft. Petals 5, convolute. Stamens 5, the filaments more or less united near the base. Cells of the ovary 1 - 2-ovuled; styles 5, separate, or partly united; stigmas club-shaped. Capsule 5-celled, few-seeded. - Herbs or shrubs, with stellate pubescence, and clustered white or purple flowers.

§ RIEDLEIA. *Capsule septicidal or loculicidal. Involucel 3-leaved. Flowers purple.*

1. **M. serrata**, Benth. Shrubby, pilose; stem slender, branching (2° - 4° high); leaves ovate, acute, unequally serrate; stipules linear, longer than the petioles; flower clusters axillary, globose, the upper ones spiked; corolla showy, purple (1′ wide). — Pine woods, South Florida. Oct.

2. **M. hirsuta,** Cav. Herbaceous, pubescent and slightly hispid; leaves ovate, subcordate, crenate-serrate; stipules subulate, shorter than the petioles; flower clusters terminal; corolla pale purple, yellowish within. — Streets of Savannah (*Feay*). East Florida (*Curtiss*). — Stem 1° - 2° high. Corolla ½′ wide.

ORDER 19. TILIACEÆ. (LINDEN FAMILY.)

Trees, rarely herbs. Leaves alternate, with deciduous stipules. Flowers axillary or extra-axillary, hypogynous, polyandrous. Sepals 4 - 5, valvate in the bud, deciduous. Petals 4 - 5, convolute or imbricated in the bud. Stamens distinct or united in clusters; anthers 2-celled, the pollen grains smooth. Style single. Stigma 4 - 10-lobed. Capsule 2 - 5-celled, 1 - many-seeded. Seeds anatropous. Embryo in the axis of fleshy albumen. Cotyledons flat, leafy.

1. TILIA, Tourn. LINDEN, BASSWOOD.

Sepals 5. Petals 5, imbricated in the bud. Stamens numerous, united in 5 clusters, with a petal-like appendage (sterile stamen) opposite each petal. Ovary 5-celled, with 2 ovules in each cell. Stigma 5-lobed. Capsule 1-celled, 1 - 2-seeded. — Trees, with cordate leaves, and several-flowered axillary peduncles, which are connate below with a large ligulate veiny bract. Flowers cream-color.

1. **T. Americana,** L. Leaves smooth and green on both surfaces, obliquely cordate or truncate at the base, sharply serrate. — Mountains of Georgia and North Carolina. June. — A large tree. Leaves 4′ - 5′ wide.

2. **T. pubescens,** Ait. Leaves hoary-tomentose on both surfaces, becoming smoothish above, obliquely truncate at the base, mucronate-serrate. — Rich soil, Florida to North Carolina. June. — Leaves 4′ – 5′ wide.

3. **T. heterophylla,** Vent. Leaves larger (6′ – 8′ wide), deep green above, white-tomentose beneath. — Mountains of Georgia and North Carolina. June – July

2. CORCHORUS, L.

Sepals 5. Petals 5, convolute in the bud. Stamens mostly numerous, separate. Style slender. Stigma dilated, crenulate. Capsule mostly elongated, silique-like, loculicidally 2-valved, many-seeded. — Herbs or shrubby plants, with alternate serrate petioled leaves, and small yellow flowers on short peduncles opposite the leaves. Stipules deciduous.

1. **C. pilolobus,** Link. Stem much branched, hairy in lines; leaves ovate and lanceolate, smooth; peduncles 1 – 2-flowered; stamens numerous; capsule linear, compressed, 2-celled, many-seeded. — Coast of Florida, and westward. — Stems 1° – 2° high. Capsule 2′ long.

3. TRIUMFETTA, L.

Sepals 5, linear. Petals 5, convolute. Stamens 10 – 30, separate. Cells of the ovary 2 – 5, 2-ovuled. Capsule uncinate-hispid, 2 – 5-celled, mostly separable into as many 1 – 2-seeded carpels. — Chiefly shrubs, with lobed leaves, and small clustered yellow flowers.

1. **T. semitriloba,** L. Hirsute, much branched; leaves round-ovate, entire, or angularly 3-lobed; peduncles 3-flowered, clustered in the axils; sepals pointed, as long as the yellow wedge-shaped petals; stamens 10 – 15; capsule globose. — Manatee, Florida. Introduced. — Stem 3° – 4° high.

ORDER 20. HYPERICACEÆ. (ST. JOHN'S-WORT FAMILY.)

Herbs or shrubs, with opposite entire dotted leaves, without stipules, and regular hypogynous, mostly yellow flowers. — Sepals 4 – 5, imbricated in the bud, persistent. Petals 4 – 5, convolute or imbricated in the bud, deciduous. Stamens mostly numerous, and often united at the base into 3 – 5 sets: anthers introrse. Styles 2 – 5, often united, persistent. Capsule 1-celled, with strictly parietal placentæ, or 2 – 5-celled by the meeting of the placentæ at the axis, septicidally 2 – 5-valved. Seeds very numerous, minute, anatropous, without albumen.

Synopsis.

* Petals convolute in the bud.

1. ASCYRUM. Sepals and (yellow) petals 4.
2. HYPERICUM. Sepals and (yellow) petals 5. Stamens without interposed glands.

* * Petals imbricated in the bud.

3. ELODES. Sepals and (rose-colored) petals 5. A gland between the sets of stamens.

1. ASCYRUM, L. St. Peter's-wort.

Sepals 4, the two outer ones much larger. Petals 4, convolute in the bud, oblique. Stamens numerous. Styles 2 – 4, distinct or united. Capsules 2 – 4-valved, 1-celled, with 2 – 4 parietal placentæ. — Smooth shrubs with 2-edged branches. Flowers mostly solitary, yellow.

* *Styles* 2 : *inner sepals small.*

1. **A. hypericoides,** L. Stems single, 1° – 3° high, branching above ; leaves linear-oblong ; flowers single or in threes, short-pedicelled ; outer sepals oval or round-cordate ; petals oblong ; styles shorter than the ovary ; capsule as long as the sepals. — Dry soil. July – August.

2. **A. Crux-Andreæ,** L. Stems numerous, decumbent and creeping, the numerous branches 6′ – 12′ high, very leafy ; leaves linear-oblong, obtuse, narrowed at the base, 6″ – 8″ long ; flowers three in a terminal cluster, and single on short branchlets ; sepals and capsule like the preceding. — Dry open woods in the upper districts. July.

3. **A. pumilum,** Michx. Dwarf ; leaves oblong-obovate, obtuse ; outer sepals round-ovate, the inner minute ; petals obovate ; pedicels long and slender, reflexed in fruit ; styles 2, united. — Dry gravelly soil, Florida, Georgia, and westward. March – April. — Stems 3′ – 6′ long, diffuse. Leaves 4″ – 6″ long.

* * *Styles* 3 – 4 : *sepals nearly equal.*

4. **A. cuneifolium,** n. sp. Stem widely branching, 6′ – 9′ long ; leaves cuneate, sessile, 6″ – 9″ long ; flowers large (1′ wide), single, long-peduncled ; outer sepals orbicular, shorter than the obovate petals, twice as long as the oblong capsule ; styles 3, filiform, half the length of the ovary. — Low pine barrens. Florida. August – Sept.

5. **A. stans,** Michx. Stem and branches erect, 1° – 2° high ; leaves 1′ long, oblong, closely sessile ; flowers short-peduncled, single ; outer sepals round-cordate, as long as the obovate petals and oblong capsules ; styles 3 – 4, short, subulate. — Low ground. July – Oct.

6. **A. amplexicaule,** Michx. Leaves and outer sepals cordate-ovate, clasping ; inner sepals lanceolate, as long as the outer ones ; petals obovate ; styles 3 ; capsule ovoid, barely half as long as the sepals. — Damp soil near the coast, Florida, Georgia, and westward. April – Sept. — Shrub 2° – 3° high. Branches many times forking.

2. HYPERICUM, L. St. John's-wort.

Sepals 5, similar. Petals 5, oblique, convolute in the bud. Stamens mostly numerous, and commonly collected in 3 – 5 sets, without intervening glands. Styles 3 – 5, distinct or united. Capsule 1 – 5-celled. — Herbs or shrubs. Flowers mostly cymose, yellow.

§ 1. *Stamens numerous.*

* *Capsules 3–5-celled: placentæ central: styles connivent: shrubs.*

+– *Carpels (cells) united only at the axis: flowers in leafy few-flowered axillary and terminal cymes: leaves narrow, and clustered in the axils, persistent.*

1. **H. aspalathoides,** Willd. Stem 1°–3° high, widely branched; leaves 2″–6″ long, linear, obtuse, spreading, the margins revolute; sepals like the leaves, half the length of the slightly 1-toothed petals, and the oblong-linear obtuse-angled 3-celled capsule. — Wet pine barrens. July–August.

2. **H. fasciculatum,** Lam. Stem 6°–18° high, strictly erect, and with long erect straight branches; leaves 9″–12″ long, filiform, acute, erect; sepals about the length of the sharply 1-toothed petals, and the oblong rather acute-angled 3-celled capsule. — Shallow ponds near the coast. July.

3. **H. galioides,** Lam. Leaves linear-oblanceolate, obtuse, tapering to the base, glossy above, rigid; cymes lateral and terminal, few-flowered, or the terminal ones compound; sepals equal, linear, acute, shorter than the petals; capsules acute. — Pine barrens, Florida to South Carolina, and westward.

Var. **ambiguum.** Leaves oblanceolate, mucronate, pale and thin; sepals unequal, lanceolate, narrowed at the base, longer than the petals. — River swamps, Florida. July–August. — Stems 2°–4° high. Branches often elongated. Leaves 1′–1½′ long.

4. **H. lobocarpum,** Gattinger. Stem erect, 5°–7° high; leaves oblong-lanceolate, obtuse or barely acute, 1½′–2′ long; cymes terminal, naked, many-flowered; sepals linear-lanceolate, 2″–3″ long, shorter than the petals; capsule oblong, 5-celled, sharply 5-angled, scarcely longer than the very slender style. — Deep marshes, West Tennessee (*Gattinger*).

5. **H. densiflorum,** Pursh. Stem 2°–4° high, much branched; leaves lanceolate, flat, obtuse, mucronate, 1′–2′ long; cymes simple or compound, naked; sepals oblong or oval, ½ as long as the petals, and ⅔ the length of the ovate 3–5-celled capsule. — Low ground in the middle and upper districts. July–August.

+– +– *Carpels partly united, forming a 3–6-celled capsule.*

6. **H. prolificum,** L. "Stem 1°–4° high, with long rather simple shoots; leaves lanceolate-oblong, mostly obtuse, narrowed at the base; flowers numerous in simple or compound clusters; pods oblong, 3-celled." *Gray.* — North Carolina (*Curtis*). Tennessee (*Gattinger*).

7. **H. ambiguum,** Ell. Stem 4°–8° high, the long straight branches erect, very leafy; leaves linear-lanceolate, or linear, tapering to the base, 1′–2′ long; cymes axillary and terminal, 7–14-flowered; sepals unequal, linear, acute, as long as the oblong petals; capsule ovate, 3–4-celled. — Banks of streams, on the mountains of Georgia and North Carolina. July–August. — A low rigid form (1°–2° high) occurs on the summit of Roan Mountain (*J. D. Smith*).

* * *Capsule 3-celled: placentæ central: styles separate: flowers dotted with black points. Herbs.*

8. **H. perforatum,** L. Stem much branched, slightly 2-edged; cymes corymbose, many-flowered; leaves elliptical or linear-oblong, obtuse, with pel-

lucid dots; sepals lanceolate, acute. — Old fields, sparingly naturalized. June–August. — Stem 1° – 2° high, bearing runners at the base. Flowers 1′ wide deep yellow.

9. **H. maculatum,** Walt. Stem terete, sparingly branched above; leaves oblong-cordate, obtuse, clasping, marked with pellucid dots; cymes many-flowered, corymbose; sepals lanceolate, acute; styles twice as long as the ovary. — Dry pine barrens, Florida to North Carolina. June – August. — Stem 1° – 2° high. Leaves 1′ – 1½′ long, rigid. Flowers small.

10. **H. corymbosum,** Muhl. Leaves thin, oblong, slightly clasping; sepals ovate; styles as long as the ovary; otherwise nearly as the last. — Mountains of North Carolina. July. — Stem 1° – 2° high. Leaves 1′ – 2′ long.

* * * *Capsule 1-celled, or partially 3-celled by the introversion of the placentæ.*

+ *Shrubs: leaves evergreen.*

++ *Cymes leafy.*

11. **H. myrtifolium,** Lam. Leaves cordate-oblong and partly clasping, mostly obtuse, glaucous; cymes few-flowered, terminal; sepals leaf-like, ovate, acute, as long as the obovate petals; stamens very numerous; capsule conical-ovate. — Pine barren ponds, Florida to South Carolina, and westward. May – Sept. — Shrub 1° – 2° high, with spreading terete branches. Leaves thick, 1′ long. Flowers 1′ wide.

12. **H. aureum,** Bartram. Leaves oblong, mucronate, narrowed at the base, wavy on the margins, glaucous beneath; flowers very large, mostly solitary at the summit of the 2-edged branches; sepals leaf-like, shorter than the thick and tardily deciduous petals; stamens very numerous; capsule ovate, much smaller than the calyx. (H. amœnum, *Pursh.*) — Banks of the Flint River, Georgia to Tennessee, and westward. June – August. — Stem 2° high, diffusely branched. Leaves 2′ – 3′ long. Flowers sometimes 2′ wide, with recurved orange-colored petals.

++ ++ *Cymes leafless.*

= *Many-flowered.*

13. **H. nudiflorum,** Michx. Branches 4-angled; leaves oblong, obtuse, narrowed at the base, paler beneath; cymes terminal, peduncled, 5 – 15-flowered; bracts subulate; buds globose; petals oval, twice as long as the oval sepals; capsule ovate, longer than the calyx. — Low grounds, chiefly in the upper districts. July – August. — Shrub 2° – 3° high. Leaves thin, 1′ – 2′ long. Flowers ½′ wide. Petals recurved.

14. **H. opacum,** Torr. & Gray. Branches 2-edged; leaves rigid, linear, oblong, sessile; cymes terminal, compound, many-flowered; bracts subulate; buds ovate; petals spreading, obovate, twice as long as the oblong unequal sepals; capsule 3-lobed, ovate, longer than the sepals. — Pine barren swamps, near the coast, Florida to South Carolina, and westward. July – Sept. — Shrub 2° – 3° high. Leaves very numerous, 1′ long. Flowers ¼′ wide. Valves of the capsule strongly impressed on the back.

15. **H. adpressum,** Barton. Stem 2°–3° high, branching and somewhat herbaceous above; leaves lanceolate, acute, 1′–2′ long; sepals lanceolate, equalling the oblong-ovoid capsule. (H. fastigiatum, *Ell.*) — Margins of swamps and ponds, Georgia and Tennessee. June–July.

= = *Cymes* 1–*few-flowered.*

16. **H. Buckleyi,** M. A. Curtis. Low, widely branching from the base; leaves oblong, obtuse, narrowed at the base, paler beneath; flowers solitary, terminal, on rather long and bracted pedicels; sepals obovate; style and stamens long and slender. — Mountains of Georgia and North Carolina. — Shrub 8′–12′ high. Flowers 1′ wide.

17. **H. microsepalum,** Gray. Stems 1°–2° high, dichotomously branched; leaves very numerous, 4″–6″ long, oblong-linear, sessile; cymes terminal, 1–3-flowered; flowers 9″–12″ wide; petals mostly 4, unequal; sepals like the leaves, barely half as long as the oblong ovate capsule. (Ascyrum, *Torr. & Gray.*) — Low pine barrens, near the coast, Florida, Georgia, and Alabama. Feb.–April.

+– +– *Perennial herbs.*

18. **H. cistifolium,** Lam. Stem woody at base, simple, or branching above, obscurely 4-angled; leaves oblong-linear, obtuse, sessile; cyme compound, many-flowered; sepals nearly equal, ovate, much shorter than the petals; styles united; capsule coriaceous, globose. — Rocky hills, Alabama and Tennessee.

19. **H. dolabriforme,** Vent. Stem woody at base, ascending, 2-edged above; leaves linear-lanceolate, sessile, spreading; cyme few-flowered; sepals unequal, ovate-lanceolate, about the length of the very oblique petals; capsule broadly conical, acuminate. — Dry hills, Tennessee. July. — Stem 6′–20′ high. Leaves 1′–1½′ long.

20. **H. graveolens,** Buckl. Stem smooth, terete, nearly simple; leaves oblong-ovate, obtuse, clasping; cymes lateral and terminal, many-flowered; petals oblong-obovate, much longer than the lanceolate acute sepals; stamens collected in three sets, as long as the petals; styles slender, twice as long as the ovary. — Mountains of North Carolina. July–August. — Stem 2°–3° high. Leaves 2′ long. Flowers large.

21. **H. pilosum,** Walt. Downy; stem terete, mostly simple, slender; leaves small, lance-ovate, acute, erect, sessile; cymes compound; styles short. — Wet pine barrens, Florida to North Carolina, and westward. July–August. ①? — Stems 1°–2° high. Leaves ½′ long. Flowers 5″–6″ wide.

22. **H. virgatum,** Lam. Smooth; stem 4-angled, branching; leaves ovate-lanceolate, acute, sessile; cymes leafy, many-flowered, the branches often simple; sepals ovate, shorter than the petals, longer than the ovate capsule. — Varies (H. acutifolium, *Ell.*) with larger shining leaves, compound and nearly leafless cymes, and more crowded flowers. — Low ground (the var. in dry soil), Florida to North Carolina, and westward. June–August. — Stem 2°–3° high. Leaves 6″–12″ long. Flowers small. Styles longer than the capsule.

§ 2. *Stamens* 5 – 20 : *capsule strictly* 1-*celled : styles separate : annuals.*

* *Flowers in cymes.*

23. **H. mutilum,** L. Stems slender, branching above, 4-angled, leaves oblong or roundish, obtuse, clasping, 5-nerved ; cymes leafy at the base ; sepals lanceolate, mostly longer than the small petals, and equalling the (green) ovoid capsule ; stamens 6 – 12. — Ditches and low grounds, common. June – August. — Stem 1° high. Branches of the cyme filiform. Flowers very small, remote.

24. **H. Canadense,** L. Stems simple or branched, 4-angled ; leaves linear or linear-lanceolate, the upper ones acute, sessile ; sepals lanceolate-acute, longer than the petals, shorter than the oblong (brown) capsule. — Wet sandy places. June – Oct. — Stem 4′ – 12′ high, with the branches erect. Flowers small, copper-yellow. Stamens 5 – 10.

* * *Flowers scattered on the slender branches : leaves minute.*

25. **H. Sarothra,** Michx. Stem much branched ; branches erect, filiform ; leaves minute, subulate, bract-like ; flowers small, sessile ; sepals scarcely half as long as the lanceolate purple capsule. — Sandy old fields. June – August. — Stems 6′ – 12′ high. Stamens 5 – 10.

26. **H. Drummondii,** Torr. & Gray. Stem much branched ; leaves linear or the lower ones oblong, acute, appressed ; sepals barely shorter than the ovate capsule ; flowers pedicelled. — Dry barren soil, Florida, South Carolina, and westward. July – August. — Stems and branches stouter than the last. Stamens 10 – 20.

27. **H. gymnanthum,** Engelm. & Gray. Stem sparingly branched, 1° – $1\frac{1}{2}$° high ; leaves 4″ – 8″ long, ovate, clasping ; cymes bracted ; sepals lanceolate, longer than the petals, equalling the conical capsule ; stamens 10 – 12. — Barrens of Tennessee, and westward. July.

3. ELODES, Adans.

Sepals 5. Petals 5, equal-sided, imbricated in the bud. Stamens mostly 9, and united in sets of three, with a scale-like gland between each set. Styles 3, distinct. Capsule 3-celled, 3-valved, many-seeded. — Smooth perennial herbs. Flowers rose-color, in contracted lateral and terminal cymes.

1. **E. campanulata,** Pursh. Leaves oblong or oval, cordate, clasping, conspicuously dotted beneath ; stamens united below the middle. — Swamps, Florida, and northward. July – August. — Stem terete, 1° – 2° high.

2. **E. petiolata,** Pursh. Leaves oblong, narrowed at the base, short-petioled, obscurely dotted beneath ; stamens united above the middle. — With the preceding. July – August. — Stem 2° high.

ORDER 21. CLUSIACEÆ. (BALSAM-TREE FAMILY.)

Trees or shrubs, with resinous yellow juice, opposite coriaceous entire dotless leaves articulated with the stem, and regular hypogynous flowers. Sepals 3 – 6. Petals 4 – 9. Stamens mostly numerous, distinct or variously united. Ovary 1 – many-celled, few – many-ovuled. Style single, often none. Fruit capsular, baccate, or drupaceous. Seeds without albumen. Embryo straight. Cotyledons thick, distinct or united.

1. CLUSIA, L.

Calyx 2-bracted, of 6 imbricated colored sepals. Petals 4 – 9. Stamens numerous, the filaments united at the base into a thick and fleshy tube. Ovary 5 – 15 celled. Ovules numerous, fixed to a central column. Stigma large, radiate-peltate. Capsule coriaceous, globose-angled, 5 – 15-celled; the valves separating from the central column at maturity. Seeds numerous, ovate — Parasitical tropical trees, with thick, opposite, entire and shining leaves, and chiefly polygamous, cymose showy flowers.

1. **C. flava,** L. Leaves short stalked, obovate, obtuse or emarginate, finely veined; flowers polygamous, single or by threes, on short axillary and terminal peduncles; sepals rounded; petals 4, oval, thick, yellow and unequal; stamens short and thick; stigma about 12-rayed; capsule pear-shaped, 12-seeded, the seeds embedded in soft pulp. — South Florida. — A small tree.

ORDER 22. CANELLACEÆ. (CANELLA FAMILY.)

Aromatic trees or shrubs, with alternate exstipulate entire leaves, and corymbose flowers. — Sepals 3, imbricated, like the 4 – 5 thick petals. Stamens 10 – 20, hypogynous, united, forming an entire truncated tube. Anthers adnate to the tube. Ovary 1-celled, the placentæ parietal. Fruit baccate. Embryo short, included in copious albumen.

1. CANELLA, P. Browne.

Sepals rounded, convex. Petals oblong, deciduous. Ovary 4 – 6-ovuled Stigmas 2 – 3. Berry globose, mostly 3-seeded, pulpy within. — A small tree. Leaves obovate-oblong, coriaceous. Corymbs terminal. Flowers small, purple.

1. **C. alba,** Swartz. — Keys of South Florida. August.

ORDER 23. CAMELLIACEÆ. (CAMELLIA FAMILY.)

Trees or shrubs, with alternate exstipulate leaves, and regular hypogynous polyandrous showy flowers. — Sepals and petals 5 – 6, imbricated in the bud. Stamens numerous, united at the base into a ring, or into sets placed opposite the petals, and adnate to their bases: anthers 2-celled, introrse. Ovary 2 – 5-celled, 2 – many-ovuled. Styles 2 – 5, distinct or united. Capsule 2 – 5-celled, mostly loculicidally dehiscent. Albumen scarce or none.

1. GORDONIA, Ellis. Loblolly-Bay.

Sepals 5, roundish, concave. Petals 5, thick, obovate, united at the base. Stamens united into 5 sets. Ovary 5-celled, with 4–8 pendulous ovules in each cell. Styles united. Capsule loculicidally 5-valved, woody. Seeds angular or winged. Flowers axillary.

§ 1. Gordonia proper. — *Stamens short, inserted on the fleshy 5-lobed cup which adheres to the base of the petals; capsule ovoid, 5-valved. — Leaves coriaceous, perennial. Flowers long-peduncled.*

1. **G. Lasianthus,** L. Sepals and petals silky; leaves obovate-oblong, narrowed into a petiole, finely serrate. — Swamps in the lower districts, Florida to North Carolina, and westward. July – August. — A tree 30°–50° high. Flowers 2′ wide, white.

§ 2. Franklinia. — *Stamens long, distinct, inserted on the base of the petals; capsule globose, loculicidally 5-valved above the middle, and septicidally 5-valved below. — Leaves deciduous.*

2. **G. pubescens,** L'Herit. Sepals and petals silky; leaves obovate-oblong, sharply serrate, white beneath; flowers short-peduncled. — A small tree. Flowers 3′ wide, white. — Discovered by Bartram a century ago near Fort Barrington on the Altamaha. Not seen since.

2. STUARTIA, Catesb.

Sepals 5–6, silky, 1–2-bracted. Petals 5–6, obovate, crenulate, silky. Stamens united into a ring at the base, and adnate to the base of the petals. Ovary 5-celled, with two anatropous ovules in each cell. Styles 5, distinct or united. Capsule ovoid, woody, 5-valved; the cells 1–2-seeded. — Shrubs, with alternate leaves, and large white or cream-colored flowers on short axillary peduncles.

§ 1. Stuartia. — *Styles united: capsule globose: seeds not margined.*

1. **S. Virginica,** Cav. Sepals 5, roundish; petals 5, round-obovate; leaves oval, thin, serrulate, finely pubescent. (S. Malachodendron, *L.*) — Shady woods, Florida to North Carolina, and westward. April – May. — Shrub 8°–12° high. Flowers 2′–3′ wide. Stamens purple.

§ 2. Malachodendron. — *Styles separate: capsule ovate, acuminate: seeds margined.*

2. **S. pentagyna,** L'Herit. Sepals and petals 5–6, the latter obovate, with jagged edges; leaves oval, acute. — Mountains of Georgia and North Carolina. May – July. — Shrub similar to the preceding, the leaves and flowers rather larger, and longer stamens.

Order 24. OLACACEÆ. (Ximenia Family.)

Trees or shrubs, with alternate entire petioled and exstipulate leaves, and regular hypogynous perfect or polygamous flowers, in axillary racemes or corymbs. — Calyx truncate or 4–5-toothed, persistent. Petals

4 – 5, distinct or partly united, valvate in the bud. Stamens mostly twice as many as the petals, and opposite them. Anthers introrse. Ovary 1 – 4-celled. Ovules few, anatropous. Style single, filiform. Fruit drupaceous, often surrounded with the enlarged calyx, 1-celled, 1-seeded. Embryo straight in the axis of fleshy albumen.

1. XIMENIA, Plum.

Calyx small, 4-toothed. Petals 4, united at the base, villous within. Stamens 8. Ovary 4-celled, the cells 3 – 4-ovuled. Drupe baccate; not enclosed in the calyx. — Thorny trees or shrubs. Leaves coriaceous. Flowers axillary, single or corymbose.

1. **X. Americana,** L. Smooth; leaves 2 – 3 together, oblong, obtuse, short-petioled; peduncles 2 – 4-flowered, shorter than the leaves; petals thick, lanceolate, spreading above, rusty-hairy within. — South Florida. — Thorns stout, ½′ long. Leaves 2′ long. Flowers small, yellow. Drupe yellow, roundish, as large as a plum. Nut white, globose.

2. SCHŒPFIA, Wallich.

Calyx truncate, calyculate. Petals united into a 4 – 5-cleft tube, smooth within. Stamens 4 or 5, opposite the lobes. Ovary 3-celled, the cells 1-ovuled. Style 3-furrowed; stigma 3-lobed. Drupe 1 – 3-seeded. — Shrubs or trees. Flowers small, on axillary peduncles.

1. **S. arborescens,** R. & S. Branches smooth, brittle; leaves ovate-lanceolate, short-petioled; peduncles short, single or clustered, 3-flowered; corolla bell-shaped, red. — South Florida. A small tree.

ORDER 25. MELIACEÆ. (MAHOGANY FAMILY.)

Trees or shrubs, with alternate exstipulate leaves, and regular hypogynous panicled flowers. Sepals 3 – 5, distinct or united. Petals 3 – 5. Stamens twice as many, united into a tube. Anthers included. Ovary 3 – 5-celled, few – many-ovuled. Style single. Seeds anatropous. Cotyledons leafy.

1. SWIETENIA, L. MAHOGANY.

Calyx 5-cleft. Petals 5. Stamens 10. Style short. Capsules woody, 5-celled, many-seeded. Seeds winged. — Trees, with pinnate leaves.

1. **S. Mahogoni,** L. Leaves abruptly pinnate, the leaflets entire; panicles axillary, with greenish yellow flowers; capsule very large. — Keys of South Florida.

2. MELIA, L. PRIDE OF INDIA.

Calyx 5-cleft, and flowers as in the preceding, but the fruit baccate, with a single wingless seed in each cell.

1. **M. Azederach,** L. (CHINA TREE.) Leaves bipinnate, the leaflets coarsely serrate; panicles axillary; flowers lilac. — Introduced by the elder Micheaux a hundred years ago, and now a common shade tree around dwellings.

ORDER 26. AURANTIACEÆ. (ORANGE FAMILY.)

The ORANGE, LEMON, and LIME (species of CITRUS, *L.*) are commonly cultivated in the warmer parts of the Southern States, and the BITTER-SWEET ORANGE (C. VULGARIS, *Risso*) is completely naturalized in some portions of South Florida.

ORDER 27. LINACEÆ. (FLAX FAMILY.)

Chiefly herbs, with entire exstipulate leaves, and regular hypogynous racemose or panicled flowers. — Sepals 4–5, imbricated in the bud, persistent. Petals 4–5, convolute in the bud, deciduous. Stamens 4–5, united at the base Styles 4–5, rarely united. Capsule globose, splitting into five 2-seeded carpels, which are more or less perfectly 2-celled and 2-valved. Seeds anatropous, suspended. Cotyledons flat.

1. LINUM, L. FLAX.

Sepals, petals, stamens, and styles 5. Capsule partly or completely 10-celled, the sells 1-seeded; seeds compressed, oily. — Stems slender. Leaves narrow and mostly alternate. Peduncle 1-flowered, borne above or opposite the leaves.

* *Styles separate: capsule* 10-*valved.*

1. **L. Virginianum,** L. Stem 1°–2° high, paniculately branched above; leaves lanceolate or oblong, the lower mostly opposite, the upper linear; flowers small, distant on the filiform branches; sepals ovate, acute, as long as the depressed-globose capsule, mostly smooth on the margins. — Dry light soil. July–August.

2 **L. Floridanum,** Trelease. Stem nearly simple, virgate, 1°–2° high; leaves linear, erect; flowers larger (½′ wide), rather closely arranged on the short corymbose branches; sepals shorter than the larger globose-ovate capsule, the inner ones glandular-ciliate. — Low pine barrens, Florida. July–August.

3. **L. striatum,** Walt. Stem striate with raised lines, widely branched, leaves 1′ long, lanceolate, acute; flowers very small, one-sided on the leafy branchlets; sepals ovate, as long as the small depressed-globose capsule. — Swamps in the upper districts.

* * *Styles more or less united: capsule* 5-*valved.*

4. **L. sulcatum,** Riddell. Annual; stem 1° high, simple or sparingly branched, sulcate; leaves linear, acute, minutely biglandular at the base; sepals glandular-hispid, as long as the ovoid capsule; styles united below the middle. — Dry soil, North Carolina.

5. **L. rigidum,** Pursh. Stem simple or sparingly branched (6′–12′ high); leaves narrow-linear; flowers few, racemose, yellow; sepals acute, glandular on the margins; styles united to the top; capsule globose. — Miami, South Florida (*Garber*).

ORDER 28. OXALIDACEÆ. (WOOD-SORREL FAMILY.)

Chiefly herbs, with sour juice, alternate compound leaves, and regular hypogynous decandrous flowers. — Sepals 5, imbricated in the bud, persistent. Petals 5, convolute in the bud, deciduous. Stamens more or less united. Styles 5, distinct. Ovary 5-celled. Capsule 5-celled, the cells few-seeded. Seeds anatropous, pendulous. Embryo straight in the axis of fleshy albumen. Cotyledons flat.

1. OXALIS, L. WOOD-SORREL.

Capsule 5-lobed; the cells loculicidally dehiscent on the back, 1–few-seeded. Seed-coat loose and separating. — Leaves 3-foliolate. Leaflets obcordate.

1. **O. violacea,** L. (PURPLE WOOD-SORREL.) Stemless; root tuberous; scapes umbellately 4–6-flowered; flowers purple, nodding. — Rich woods, West Florida to North Carolina, and westward. May–June. — Scapes and petioles 5′–9′ high.

2. **O. Acetosella,** L. (WHITE WOOD-SORREL.) Stemless; root creeping; scape 1-flowered; flower white, veined with red. — Mountains of North Carolina, and northward. June. — Scape and petioles hairy, 2′–5′ high.

3. **O. grandis,** Small. Annual; stem simple, smooth or villous, 1°–2° high; leaves exstipulate, the large (1′–2′ wide) leaflets margined with brownish purple; flowers yellow, umbellate or cymose, 5″–7″ long, trimorphous. — Alabama (*Mohr*), and northward. May.

4. **O. corniculata,** L. (YELLOW WOOD-SORREL.) Perennial, appressed-hairy; stems creeping; leaves small, minutely stipulate; peduncles 1–2 flowered; flowers yellow, 2″–4″ long; styles as long as the longer stamens, capsule many-seeded. — Cultivated ground. Introduced.

Var. **macrantha,** Trelease. Perennial, villous; peduncles 3–7-flowered, longer than the leaves; flowers 3″–6″ long, trimorphous. — Dry sandy soil near the coast, Georgia, and westward. April–May.

Var. **stricta,** Sav. Annual, smoothish, stem erect, 6′–12′ high, at length much branched: peduncles 3–9-flowered, twice as long as the leaves; stipules none; flowers 2″–3″ long; styles as long as the stamens, capsule short, few-seeded — Waste and cultivated ground. April–May.

5. **O. recurva,** Ell. Pubescent, mostly simple, 4′–8′ high; leaves small, shorter than the 2–6-flowered peduncles, petals obovate, 2–3 times as long as the calyx; styles shorter than the stamens, recurved. — Cultivated and waste ground, North and South Carolina. April–May.

ORDER 29. LIMANTHACEÆ. (LIMANTHUS FAMILY.)

Low annual herbs, with alternate pinnately divided leaves, and solitary axillary flowers. — Sepals valvate, persistent. Petals convolute, withering-persistent. Stamens twice as many as the sepals. Ovaries distinct, with a single erect ovule, becoming rugose-tuberculate achenia at maturity. Seed without albumen.

1. FLŒRKIA, Willd.

Sepals 3. Petals 3, oblong, entire. Stamens 6. Ovaries 3, united at base to the central axis. Style 3-cleft. Achenia globose. Cotyledons thick. Radicle inferior. — A small tender decumbent annual, with 3 – 5-lobed leaves, and small white peduncled flowers.

1. **F. proserpinacoides,** Willd. — Marshes and shady banks. Tennessee. May – July.

ORDER 30. GERANIACEÆ. (GERANIUM FAMILY.)

Herbs or shrubby plants, with tumid joints, alternate or opposite palmately lobed stipulate leaves, and hypogynous decandrous flowers. — Sepals 5, imbricated in the bud, persistent. Petals 5, convolute in the bud, deciduous. Stamens monadelphous at the base; the 5 exterior ones shorter and often sterile. Ovaries 5, 2-ovuled, and, with the persistent styles, adnate to an elongated central axis, from which they separate elastically at maturity. Seed solitary, without albumen. Embryo convolute.

1. GERANIUM, Tourn. CRANESBILL.

Flowers regular. Stamens perfect, the inner ones with a gland at the base. Styles at maturity separating with the 1-seeded carpels, and coiled upward, the inner face naked. — Herbs. Stems forking. Leaves palmately lobed. Peduncles 1 – 3-flowered.

1. **G. maculatum,** L. Perennial, erect, hairy; leaves 5 – 7-parted, the divisions acutely lobed and toothed; peduncles 1 – 2-flowered, the terminal ones often umbellate; petals large, entire, 2 – 3 times longer than the oblong awned sepals. — Open woods in the upper districts. April – May. — Root tuberous, very astringent. Stem 1° – 2° high. Flowers purple, 1′ wide.

2. **G. Carolinianum,** L. Annual, generally prostrate, pubescent; leaves 5 – 7 parted, the narrow divisions obtusely lobed and toothed; peduncles 2-flowered; petals emarginate, as long as the ovate awned sepals. — Waste places, common. March – April. — Stems forking, 6′ – 18′ long. Flowers pale purple.

ORDER 31. BALSAMINACEÆ. (BALSAM FAMILY.)

Smooth and succulent annual herbs, with undivided exstipulate leaves, and irregular hypogynous pentandrous flowers. — Sepals 5, colored, deciduous; the two inner (and upper) ones united, the lowest large and saccate. Petals 4 – 5, distinct or united. Stamens 5, coherent above. Ovary 5-celled, the cells 2 – several-ovuled. Fruit capsular or drupaceous. Seeds anatropous, without albumen. Embryo straight, with thick cotyledons.

1. IMPATIENS, L. JEWEL-WEED.

Lowest sepal saccate and spurred. Petals 4, united by pairs. Filaments short, with a scale on the inner face. Capsule 5-celled, bursting elastically into 5 valves. Placentæ central, persistent. — Stems branching, somewhat pellucid. — Leaves serrate. Peduncles axillary, 1 – several-flowered. Earliest flowers fruiting in the bud.

1. **I. pallida,** Nutt. (PALE TOUCH-ME-NOT.) Leaves ovate or oval, obtusely serrate, membranaceous; flowers pale yellow; lower sepal slightly spotted, dilated, open, tipped with a short recurved spur. — Wet shady places. July – Sept. — Stems 2° – 4° high.

2. **I. fulva,** Nutt. (SPOTTED TOUCH-ME-NOT.) Flowers deep orange; lower sepal conical, conspicuously spotted, tipped with a rather long recurved spur; otherwise like No. 1, but with smaller flowers. — Shady swamps. July – Sept.

ORDER 32. ZYGOPHYLLACEÆ. (BEAN-CAPER FAMILY.)

Herbs, shrubs, or trees, with hard wood, opposite pinnate dotless stipulate leaves, and regular hypogynous mostly decandrous flowers. — Sepals and petals 5 – 6, imbricated or convolute in the bud. Stamens distinct, often appendaged. Ovary 2 – 12-celled, with the styles united. Capsule composed of 2 – 12 indehiscent carpels, which separate from each other and often from a central axis at maturity. Embryo straight. Cotyledons flat. Radicle superior.

Synopsis.

1. **TRIBULUS.** Carpels 5, transversely few-celled, few-seeded. Herbs.
2. **KALLSTRÖMIA.** Carpels 10, 1-celled, 1-seeded. Herbs.
3. **GUAIACUM.** Carpels 2 – 5, compressed, 1-seeded. Trees.

1. TRIBULUS, L.

Sepals 5, imbricated in the bud, deciduous. Stamens 10. Ovary 5-celled, with 3 – 5 suspended ovules in each cell. Carpels of the fruit 5, spiny on the back, transversely divided into 2 – 5 one seeded cells, separating at maturity.

without a central axis. Albumen none. — Prostrate herbs. Leaves abruptly pinnate. Peduncles solitary, 1-flowered.

1. **T. cistoides,** L. Leaves unequal; leaflets 6 – 16, linear-oblong, mucronate, silky beneath; peduncles as long as the leaves; flowers large, yellow. — South Florida. — Stems 1° – 2° long, hairy. Petals 2 – 3 times as long as the calyx.

2. KALLSTRÖMIA, Scop.

Sepals 5 – 6, persistent, imbricated in the bud. Stamens 10 – 12. Ovary 10 – 12-celled, the cells 1-ovuled. Carpels of the fruit 10 – 12, separating from each other and from the central axis. Albumen none. — Hairy herbs, with the habit of TRIBULUS.

1. **K. maxima,** Torr. & Gray. Leaves nearly equal; leaflets 6 – 8, obliquely oblong, mucronate, the terminal pair larger; peduncles shorter than the leaves; petals as long as the bristly calyx, yellow; carpels rugose on the back. — Key West and Savannah. — Stems 1° – 2° long.

3. GUAIACUM, Plum.

Sepals 5, deciduous. Stamens 10, with naked filaments Ovary stalked, 2 – 5-celled, the cells 8 – 10-ovuled. Carpels of the fruit 2 – 5, compressed, 1-seeded. Seed-coat fleshy. Embryo straight in hard thin albumen. — Trees. Leaflets reticulate. Flowers blue or purple.

1. **G. sanctum,** L. Branches opposite and forking, jointed, pubescent when young; leaflets 6 or 8, obliquely obovate or oblong, mucronate, entire; peduncles single or clustered at the forks of the branches, 1-flowered, shorter than the leaves; sepals and petals obtuse; flowers blue. — South Florida. — A small tree with white bark. Flowers ½′ wide. Fruit obovate.

ORDER 33. RUTACEÆ. (RUE FAMILY.)

Herbs, shrubs, or trees, with exstipulate simple or compound dotted leaves, and regular hypogynous perfect or unisexual flowers. — Sepals and petals 3 – 5. Stamens as many or twice as many as the sepals. Ovaries 2 – 5, distinct or united, stipitate or sessile on a glandular disk. Styles mostly united. Fruit commonly composed of separate 1-celled 2-valved carpels. Embryo straight or curved, mostly in fleshy albumen.

1. XANTHOXYLUM, L. PRICKLY ASH.

Flowers monœcious or diœcious. Sepals and petals 3 – 5. Stamens 3 – 5. Ovaries 2 – 5, sessile or stipitate, 2-ovuled. Carpels 2-valved, 1 – 2-seeded. Seed smooth and shining. — Trees or shrubs, commonly armed with stipular prickles. Leaves unequally pinnate, the leaflets punctate with pellucid dots. Flowers small, greenish.

1. **X. Clava-Herculis,** L. (TOOTHACHE TREE.) Smooth; branches and commonly the petioles armed with long prickles; leaves alternate, 7 – 9-

foliolate; leaflets ovate-lanceolate, crenate-serrulate, unequal-sided, shining above; panicles terminal; stamens 5; carpels 3, nearly sessile. — Var. FRUTICOSUM, Gray. Shrubby; leaves shorter, ovate or oblong, more strongly crenate; ovaries always two. — Dry soil, Florida to North Carolina, and westward. June. — A small tree, with the pungent bark armed with warty prickles.

2. **X. Caribæum,** Lam. (SATIN-WOOD.) Branches and petioles unarmed; leaflets 5 – 7, ovate-lanceolate on the fertile plant, and elliptical, obtuse, or emarginate on the sterile, slightly crenulate, and like the cymose panicle stellate-pubescent; stamens 4 – 5; carpels 1 – 2, obovate, stipitate; seed solitary, obovate, black and shining. — South Florida. — Leaves 1′ – 2′ long. Cyme sessile, divided into three primary branches. Flowers minute.

3. **X. Pterota,** HBK. Smooth; branches zigzag, armed with short curved prickles; petiole winged, jointed; leaflets 7 – 9, small, obovate, coriaceous, crenate above the middle, sessile; flowers in axillary clusters, which are single or by pairs, as long as the first joint of the petiole; stamens 4; ovaries 2; carpels solitary, globose, pitted, distinctly stipitate. — South Florida. — Leaflets ½′ – ¾′ long, those on the fertile plant narrower and smaller. Carpels small, dotted.

2. PTELEA, L. HOP-TREE.

Flowers polygamous. Sepals and petals 4 – 5, imbricated in the bud, deciduous. Stamens 4 – 5. Ovary 2-celled, with two ovules in each cell. Style short. Stigma 2-lobed. Capsule 2-celled, 2-seeded, surrounded by a broad circular reticulated wing. — Unarmed shrubs, with trifoliolate leaves, and small greenish flowers in a terminal cyme.

1. **P. trifoliata,** L. Pubescent or tomentose; leaves long-petioled; leaflets oval or oblong, mostly acute, obscurely crenulate, paler beneath, the lateral ones unequal-sided; filaments 4 – 5, densely villous below the middle, longer than the style in the sterile flowers, shorter in fertile ones. Rocky banks. May – June. — Shrub 4° – 8° high. Leaflets 2′ – 4′ long. Fruit 1′ wide.

2. **P. Baldwinii,** Torr. & Gray. Leaves very small, glabrous; leaflets sessile, oval, obtuse, the terminal one cuneiform at the base; flowers tetrandrous; style none. — East Florida. — Shrub 1° high with numerous short and scraggy branches. Leaflets 1′ long. Flowers smaller than in No. 1.

3. AMYRIS, L. TORCH-WOOD.

Flowers perfect. Calyx 4-parted. Petals 4, narrowed at the base, imbricated in the bud. Stamens 8, shorter than the petals, hypogynous. Ovary 1-celled. Stigma capitate. Drupe globose, 1-seeded. Cotyledons plano-convex. — Trees or shrubs. Leaves 3 – 7-foliolate, opposite, with glandular pellucid dots. Flowers panicled, white.

1. **A. maritima,** Jacq. Smooth; leaves petioled, trifoliolate; leaflets ovate, obtuse, entire, on slender stalks; branches of the panicle opposite; drupe, like the flowers, dotted. — South Florida. — A shrub or small tree. Leaflets 1′ – 1¼′ long, shining above. Flowers yellowish white.

ORDER 34. SIMARUBACEÆ. (QUASSIA FAMILY.)

Trees or shrubs, with, usually, bitter milky juice, simple or pinnate exstipulate leaves, and regular perfect or polygamous hypogynous flowers. — Calyx 3 – 5-cleft, persistent. Petals 3 – 5, deciduous. Stamens as many or twice as many, inserted on a hypogynous disk. Ovary composed of distinct or united carpels, each 1 – 2-ovuled. Fruit drupaceous. Albumen none. — The following genera represent as many tribes of the order.

1. SIMARUBA, Aublet. QUASSIA.

Flowers monœcious or diœcious. Calyx 4 – 5-toothed. Petals 4 – 5, spreading. Stamens 8 – 10, with the filaments adherent to the back of a ciliate scale. Ovaries 4 – 5, surrounded by 8 – 10 scale-like rudiments of stamens with a single suspended ovule in each. Drupes 1 – 5. — Trees. Leaves abruptly pinnate, with alternate and entire leaflets. Flowers small, greenish, in lateral and terminal panicles.

1. **S. glauca,** DC. Smooth throughout; flowers diœcious; stigmas 5, subulate, spreading; leaflets 4 – 8, alternate and opposite, coriaceous, obovate or oblong, obtuse, paler beneath; drupe oval, mostly solitary. — South Florida. — A large tree.

2. PICRAMNIA, Swartz.

Flowers diœcious. Calyx 3 – 5-parted. Petals 3 – 5, oblong. Stamens 3 – 5, opposite the petals, exserted. Stigmas 2, sessile. Fruit a 2-celled, 2-seeded drupe. — Small trees, with unequally pinnate leaves, and small flowers in terminal racemes or panicles.

1. **P. pentandra,** Swartz. Leaflets 5 – 7, alternately distant, ovate-oblong, obtuse; panicle simple, drooping; flowers greenish; stamens 5. — Miami, South Florida (*Garber*).

3. SURIANA, Plum.

Calyx 5-parted, persistent; the base filled with a fleshy torus, which bears the ovaries, petals, and stamens. Petals 5, oblong-obovate. Stamens 10, hairy, the alternate ones short and sterile. Ovaries 5, distinct, with 2 erect collateral orthotropous ovules in each. Styles 5, each arising from the central angle of the ovary near the base, thickened upwards. Carpels 1-seeded, indehiscent. Seeds without albumen. Embryo hooked. — A downy shrub, with alternate crowded exstipulate leaves, and perfect yellow flowers, in small axillary bracted racemes.

1. **S. maritima,** L. — Sea-shore, South Florida. — Shrub 4° – 6° high. Leaves linear-spatulate, fleshy, imbricated near the summit of the branches. Racemes shorter than the leaves.

ORDER 35. BURSERACEÆ. (TORCH-WOOD FAMILY.)

Trees or shrubs, with resinous juice, unequally-pinnate or trifoliolate commonly dotted leaves, and small regular flowers in axillary or terminal racemes or panicles. — Calyx free from the 1 – 5-celled sessile ovary, 2 – 5-lobed, persistent. Petals 2 – 5, alternate with the calyx-lobes, and inserted under an orbicular or annular disk at the bottom of the calyx, mostly valvate in the bud. Stamens twice as many as the petals, and inserted with them: anthers introrse. Ovules anatropous, pendulous, mostly two in each cell. Stigmas 1 – 5. Fruit drupaceous, dry; the pericarp often splitting into valves. Albumen none. Radicle superior.

1. BURSERA, Jacquin.

Flowers polygamous. *Sterile Fl.* Calyx 3 – 5 parted. Petals 3 – 5, valvate in the bud. Stamens 6 – 10. Disk crenulate. *Fertile Fl.* Calyx 3-parted. Petals 3. Stamens 6. Ovary ovate, 3-celled. Style short: stigma 3-lobed. Drupe oblong, 1-seeded; the pericarp 3-valved. Cotyledons wrinkled.

1. **B. gummifera,** Jacquin. Leaves alternate, 3 – 9-foliolate, long-petioled, deciduous; leaflets stalked, opposite, ovate, acuminate, entire, rounded or slightly cordate at the base, at length smooth on both sides; flowers small, whitish, in axillary racemes; drupe purplish. — South Florida. — A large tree.

ORDER 36. ANACARDIACEÆ. (CASHEW FAMILY.)

Trees or shrubs, with milky or resinous juice, alternate exstipulate dotless leaves, and perfect or polygamous regular flowers. — Sepals and petals 4 – 5, imbricated in the bud. Stamens as many as the petals, or twice as many, and inserted with them on the base of the calyx. Ovary solitary, with a single ovule ascending from the base of the cell. Style simple or 3-cleft. Fruit drupaceous. Seeds without albumen. Radicle curved.

1. RHUS, L. SUMACH.

Calyx 5-parted. Petals 5, inserted with the 5 stamens on the disk which surrounds the base of the ovary. Stigmas 3. Drupe dry. Radicle superior, incurved. — Shrubs or small trees. Leaves pinnate or trifoliolate, rarely simple. Flowers small, greenish, in spikes or panicles.

* *Flowers polygamous, in a close terminal panicle: drupe red, hairy: leaves pinnate.* (*Not poisonous.*)

1. **R. typhina,** L. Branches, petioles, and drupes villous; leaflets 17 – 21, lanceolate, acuminate, serrate, smooth, pale beneath. — Dry hillsides in the upper districts. June – July. — A shrub or small tree.

2. **R. glabra,** L. Smooth and glaucous; leaflets 17 – 31, oblong-lanceolate, serrate, acuminate, white beneath. — Open woods in dry rich soil. July. — A shrub 6° – 10° high. Petioles terete.

3. **R. copallina,** L. (SUMACH.) Branches and wing-margined petioles tomentose; leaflets 9 – 21, lanceolate or ovate-lanceolate, acute or obtuse, mostly entire, smooth above, paler and downy beneath; panicle often large and spreading. — Margins of fields and open woods. July – August. — A shrub or small tree.

4. **R. pumila,** Michx. Low, procumbent; branches and petioles tomentose; leaflets 11 – 13, oval or oblong, acute, coarsely serrate, pale and tomentose beneath. — Pine barrens, Georgia to North Carolina. — Branches 1° high.

* * *Flowers diœcious, in loose axillary panicles: drupe whitish, smooth: leaves pinnate and trifoliolate. — (Juice poisonous.)*

5. **R. venenata,** DC. (POISON ELDER.) Smooth; leaves pinnate; leaflets 7 – 13, ovate or oblong, abruptly acute or acuminate, entire; panicles long peduncled, narrow, erect. (R. Vernix, *L.*) — Swamps. July. — A shrub 8° – 12° high.

6. **R. Toxicodendron,** L. (POISON OAK, POISON IVY.) Branches and petioles smooth; leaves trifoliolate; leaflets ovate or oblong-ovate; panicle small, spreading.

Var. **quercifolium,** Michx. Stems low, erect; leaflets mostly variously lobed. — Dry pine barrens.

Var. **radicans,** Torr. Stems climbing by rootlets; leaflets toothed or entire, rarely lobed, more or less pubescent. — Swamps. July.

* * * *Flowers diœcious, in loose panicles: drupe oblong, smooth, scarlet: nut chartaceous: seeds arillate: leaves pinnate.*

7. **R. Metopium,** L. Smooth; leaflets 3 – 7, coriaceous, long-stalked, ovate or elliptical, acuminate, entire; panicle narrow, as long as the leaves; calyx lobes yellowish white; petals and stamens 5. — South Florida. — A tree 15° - 20° high.

* * * * *Flowers diœcious, in short bracted spikes, appearing with the leaves: drupe red, hairy: leaves trifoliolate.*

8. **R. Canadensis,** Marsh. Stem low, smooth; leaflets ovate, or the terminal one obovate, obtuse, pubescent when young, toothed above the middle; spikes single or clustered, spreading. — Dry open woods in the upper districts. March – April. — Shrub 1° – 2° high. Spikes 1′ long. — Plant aromatic, not poisonous.

* * * * * *Flowers perfect, in an open panicle, the pedicels mostly abortive, elongating, and plumose: drupe smooth.*

9. **R. cotinoides,** Nutt. Smooth; leaves simple membranaceous, oval, obtuse, entire, acute at the base, the upper ones long-petioled; panicle nearly sessile, narrow, with erect branches; flowers minute. — Alabama (*Buckley, Mohr*). — Leaves, with the petiole, 3′ – 4′ long.

ORDER 37. VITACEÆ. (VINE FAMILY.)

Climbing shrubs, with watery juice, alternate stipulate leaves, and small greenish flowers in panicled or cymose clusters opposite the leaves. — Calyx minute, truncated. Petals 4 – 5, hypogynous or perigynous, valvate in the bud, deciduous. Stamens 4 – 5, opposite the petals: anthers introrse. Ovary 2-celled, with 2 erect collateral ovules in each cell. Style short or none: stigma slightly 2-lobed. Berry 1 – 4-seeded. Seeds anatropous, bony. Embryo minute at the base of hard or fleshy albumen. Radicle inferior. — Leaves simple or compound. Tendrils opposite the leaves. Flowers perfect or polygamous.

1. VITIS, L. VINE, GRAPE.

Flowers polygamous. Petals 5, cohering at the top, free at the base. Stamens 5. Disk thick, 5-lobed. Style short. — Leaves simple, entire or lobed, cordate. Inflorescence paniculate. Berry pulpy, edible.

§ 1. VITIS proper. *Bark loose and shreddy: tendrils forked: pith interrupted at the nodes.*

* *Tendrils opposite each leaf* (*continuous*).

+ *Leaves and branches woolly.*

1. **V. Labrusca,** L. (FOX GRAPE.) Leaves broadly cordate, angularly 3 – 5-lobed, mucronate-serrate, very woolly when young, at length smoothish above; fertile panicles or racemes few-flowered; berry large. — River swamps, Mississippi to North Carolina. May – June. — Leaves 4′ – 6′ wide. Berry ½′ in diameter, purple or whitish, pleasant-flavored.

* * *Tendrils absent at every third leaf* (*intermittent*).

+ *Leaves and branches pubescent.*

2. **V. æstivalis,** Michx. (SUMMER GRAPE.) Branchlets terete; leaves broadly cordate, the sinus rounded, entire, or obtusely 3 – 5-lobed, broadly serrate, covered with a woolly mostly reddish pubescence, at length smooth on both sides; sterile panicle long and loose; berry small, blue. — Woods and thickets. June. — Stem climbing high. Leaves 4′ – 7′ wide. Panicles 6′ – 12′ long. Berry 4″ – 5″ in diameter.

3. **V. cinerea,** Engelm. Cinereous-pubescent; branchlets angular; the pubescence persistent; leaves entire or slightly 3-lobed, the sinus narrow; berries small, black, pleasantly acid; otherwise like the preceding. — Low ground along rivers, Florida, and westward.

4. **V. coriacea,** Shuttlw. Leaves and branches white-downy; leaves 2′ long, reniform-cordate, with the sinus broad and shallow, entire and with undulate margins, or sharply 3 – 5-lobed, glabrate above; panicles dense, shorter than the leaves, the pedicels smooth. — South Florida. — A low vine. Berries 5″ – 6″ in diameter, pleasantly acid.

+ + *Leaves and branches smooth.*

5. **V. cordifolia,** Michx. (FROST GRAPE.) Leaves 3′ wide, cordate, with an acute sinus, acuminate, entire or slightly 3-lobed, sharply toothed

panicles long and loose; berries small, black, ripening late. — River banks and low ground. May – June. — Stem climbing high. Berries 2″ – 3″ in diameter, sharply acid.

6. **V. riparia,** Michx. Leaves orbicular-cordate, with a rounded sinus, 3′ – 6′ wide, strongly 3 – 5-lobed, coarsely toothed; stipules 2″ – 3″ long; panicle small, the berries in compact clusters, 4″ – 5″ in diameter, black with a bloom, sweet and juicy, ripening early. — River banks, Tennessee.

7. **V. rupestris,** Scheele. Stem low, erect, branching; leaves 3′ long, glabrous, cordate or truncate at the base, rarely lobed, coarsely toothed; berries small, sweet and juicy. — Sandy banks, Tennessee, and westward. May. — Tendrils weak and deciduous, or none.

§ 2. MUSCADINIA. *Bark pale and smooth; tendrils simple; pith continuous through the nodes; seed transversely wrinkled.*

8. **V. rotundifolia,** Michx. (MUSCADINE, BULLACE.) Leaves broadly cordate, toothed-serrate, mostly smooth and glossy, the sinus broad and rounded, or narrow and acute; panicle small; berry large. — Banks of rivers, Florida to North Carolina, and westward. June. — Stem climbing high. Leaves 2′ – 3′ wide. Berry ½′ – ¾′ in diameter, purple, pleasant-flavored. — A form with smaller leaves and berries, the latter very austere, and sometimes called the MUSTANG GRAPE, is common along the coast.

2. CISSUS, L.

Flowers mostly perfect. Petals 4, and spreading, rarely 5, and cohering at the top. Stamens 4 – 5. Disk cup-shaped. Styles mostly slender. — Leaves simple or compound. Inflorescence cymose. Berries small, inedible.

1. **C. bipinnata,** Nutt. Leaves bipinnate, smoothish; leaflets small, ovate, sharply toothed; flowers somewhat cymose, on a long forking peduncle; petals 4 – 5, united at the apex, or spreading; style conical; disk 4 – 5-lobed; berry 2 – 4-seeded. — Margins of swamps. June – July. — Stem climbing. Leaflets ½′ – 1′ long. Berry small, black.

2. **C. acida,** L. Branches geniculate; leaves trifoliolate, thick and rigid; leaflets small, cuneate-obovate, sharply toothed at the apex; flowers in compound umbels; petals 4; berry black, 1-seeded. — Key West. — Tendrils stout and elongated. Leaflets ½′ long.

3. **C. incisa,** Desmoul. Smooth; stem climbing, warty; leaves trifoliolate, very thick and fleshy; leaflets stalked, wedge-shaped and entire near the base, the lateral ones 2-lobed, the middle 3-lobed, all mucronate-toothed or serrate; cymes trichotomous; petals 4; berry globose-ovate, nodding, pointed with the conspicuous slender style, 1-seeded. — Sandy shores, Florida, and westward. — Stem 6° – 12° long. Leaflets 1′ – 3′ long. Panicles cymose. Berry 5″ – 6″ long.

4. **C. Ampelopsis,** Pers. Leaves simple, undivided, ovate, truncate, or cordate at the base, acuminate, toothed-serrate, pubescent; peduncles forking; petals and stamens 5; style slender; disk cup-shaped; berry 1 – 3-seeded. — Banks of rivers, Florida to South Carolina, and westward. June. — Stem climbing high. Berry small, black.

5. **C. sicyoides**, L. Pubescent; leaves entire, oblong-ovate, cordate, 2′–4′ long, setaceously serrate, longer than the small trichotomous cymes; petals 4; styles long and slender; berries globose, 1-seeded. — Low banks, South Florida. — Stem climbing high. Leaves succulent.

3. AMPELOPSIS, Michx. Virginian Creeper.

Flowers perfect. Petals 5, thick, spreading. Style short, conical. Disk none. — Stem climbing by expansion of the ends of the tendrils. Leaves digitate. Flower in corymbose cymes. Berry small, globose.

1. **A. quinquefolia**, Michx. (Virginian Creeper.) — Low grounds. June. — Stem climbing by lateral tendrils. Leaflets 5, oblong-obovate, serrate above the middle, smooth. Berry small, dark blue.

Order 38. RHAMNACEÆ. (Buckthorn Family.)

Trees or shrubs, with simple mostly stipulate leaves, and small regular perigynous greenish or whitish flowers. — Sepals 4–5, united below, valvate in the bud. Petals alternate with the sepals, concave or hooded, sometimes wanting. Stamens opposite the petals, and inserted with them into the margin of a fleshy disk, which lines the base of the calyx. Ovary 1–4-celled, with a solitary erect anatropous ovule in each cell. Style single. Fruit drupaceous. Embryo large, in the axis of scanty fleshy albumen. Radicle inferior.

Synopsis.

Tribe I. **FRANGULEÆ.** Fruit superior, drupaceous, fleshy or baccate.

* Putamen entire, 1–3-celled.

+ Petals none.

1. CONDALIA. Disk thick, filling the base of the calyx. Albumen entire.
2. REYNOSIA. Disk thin, lining the calyx-tube. Albumen ruminated.

+ + Petals 4–5.

3. BERCHEMIA. Petals 5, as long as the calyx. Woody vines.

* * Putamen separating into 2–4 nutlets.

4. SAGERETIA. Flowers in terminal spikes. Leaves opposite.
5. RHAMNUS. Flowers in axillary clusters. Leaves alternate.
6. CEANOTHUS. Flowers in thyrsoid panicles. Calyx white.
7. COLUBRINA. Flowers in axillary clusters. Calyx green. Fruit dry.

Tribe II. **GOUANIEÆ.** Fruit inferior, dry, 3-winged.

8. GOUANIA. A woody vine, climbing by tendrils. Flowers diœcious.

1. CONDALIA, Cav.

Calyx 4–5-cleft, adherent to the base of the ovary, the lobes deciduous Petals none. Stamens 4 or 5, alternate with the calyx lobes. Ovary 2–3-celled, with a single erect ovule in each cell. Style short; stigma 2–3-lobed

Drupe 1-celled, 1-seeded, the seed not grooved. — Mostly spiny trees or shrubs, with short-petioled leaves, and small clustered axillary flowers.

1. **C. ferrea,** Griseb. Unarmed; branchlets puberulent; leaves oval or oblong, obtuse or emarginate, entire, smooth; umbel-like clusters few-flowered, sessile or short-peduncled; calyx lobes 4, ovate, acute; stamens 4; stigma 2-lobed; drupe globose. (Scutia ferrea, *Brongn.*) — Coast and Keys of South Florida. — A small tree. Leaves thick, 1′–2′ long.

2. REYNOSIA, Griseb.

Calyx urceolate, 5-cleft. Stamens 5. Ovary free, 1-celled, 1-ovuled. Drupe baccate. Seed large, with ruminated albumen. Otherwise like Condalia.

1. **R. latifolia,** Griseb. Leaves pale, coriaceous, alternate or opposite, elliptical or obovate, emarginate; flowers axillary, short-pedicelled; calyx-tube 5-angled, the lobes ovate; stigma 2-lobed; drupe ovoid. (Scutia ferrea, 1st edition.) — South Florida. — A small tree, or shrub. Leaves 1′, or less, long. Drupe ½′ long.

3. BERCHEMIA, Neck. SUPPLE-JACK.

Calyx 5-cleft, the tube hemispherical. Petals 5, sessile, concave, as long as the calyx. Ovary free, 2-celled, half immersed in the fleshy disk. Styles united. Stigmas 2. Drupe oblong, 2-celled, 2-seeded. — Erect or twining shrubs, with alternate pinnately veined leaves, with minute stipules, and small greenish axillary or panicled flowers.

1. **B. volubilis,** DC. Stem twining; leaves oblong, acute, wavy on the margins, glossy above, the simple veins oblique; flowers in small terminal panicles; drupe purple. — Swamps, Florida to North Carolina, and westward. May – June.

4. SAGERETIA, Brongn.

Calyx 5-cleft, the tube hemispherical, the lobes carinate within. Petals obovate, shorter than the calyx, concave. Ovary free, 3-celled. Stigmas 3, nearly sessile. Drupe baccate, composed of three even 1-seeded indehiscent nutlets. Seeds not grooved. Cotyledons flat. — Slender trailing shrubs, with opposite branches and leaves, and minute whitish spiked flowers.

1. **S. Michauxii,** Brongn. Stem vine-like (6° – 18° long), with spine-like spreading branches; leaves (1′ long) nearly sessile, ovate or oblong-ovate, acute, finely serrate, smooth and shining, persistent; spikes slender, interrupted, mostly panicled; petals minute; drupe dark purple, globose. (Rhamnus minutiflorus, *Michx.*) — Dry sandy soil along the coast, Florida to North Carolina. Sept. — Drupes pleasantly acid.

5. RHAMNUS, Tourn. BUCKTHORN.

Calyx 4 – 5 cleft, the tube urceolate, lined with a thin disk. Petals small, obovate, concave, often wanting. Ovary free, 2 – 4-celled. Styles united below. Stigmas 2 – 4. Drupe baccate, composed of 2 – 4 somewhat dehiscent nutlets. Raphe dorsal. Cotyledons leafy, revolute. — Shrubs, with alternate stipulate finely veined leaves, and small axillary clustered polygamous or diœcious greenish flowers.

1. **R. lanceolatus,** Pursh. Leaves oblong-lanceolate, acute, or those of the flowering branches oblong and obtuse, serrulate; flowers clustered, on short pedicels, with long styles, or the more fruitful ones scattered on longer pedicels, and with short styles; petals emarginate; drupe 2-seeded; seeds grooved. — Hills and river banks, in the upper districts, Alabama and northward. June. — A tall shrub. Drupes black, as large as a grain of pepper.

2. **R. Carolinianus,** Walt. (Carolina Buckthorn.) Leaves oblong, wavy and finely serrulate on the margins, the slender petioles and many-flowered short-stalked umbels pubescent; petals 5, minute; stigmas 3; drupe globose, 3-seeded; seeds even. — Fertile soil, Florida to North Carolina, and westward. June. — A shrub or small tree. Leaves 3′ – 4′ long.

6. CEANOTHUS, L. Jersey Tea.

Calyx colored, 5-cleft, with the tube adnate to the ovary and persistent, the lobes connivent, deciduous. Petals 5, longer than the calyx, hooded, long-clawed. Stamens exserted. Style 3-parted. Drupe dry, composed of three 2-valved 1-seeded nutlets. Embryo in fleshy albumen. Cotyledons flat. — Shrubby plants, with alternate serrulate minutely stipulate 3-ribbed leaves, and small flowers in lateral and terminal corymbs or panicles.

1. **C. Americanus,** L. Branches pubescent; leaves deciduous, variable in size, ovate or ovate-lanceolate, acute or obtuse, sharply serrate, more or less pubescent, petioled; peduncles elongated, mostly 2-leaved above. — Dry woods. July. — Plant shrubby, 1° – 2° high. Leaves 3-ribbed, varying from ¾′ (C. intermedius, *Ell.*) to 3′ long, often nearly smooth (C. herbaceus, *Raf.*). Flowers and pedicels white.

2. **C. microphyllus,** Michx. Stem erect, diffusely much-branched; leaves perennial, small, obovate, slightly crenate, 3-ribbed, glossy above, with scattered hairs beneath; those in the axils clustered; corymbs small, terminal. — Dry barrens, Florida and Georgia, and westward. April – May. — Shrub 1° – 2° high, yellowish. Leaves 2″ – 3″ long. Pedicels and flowers white. Drupe black.

3. **C. serpyllifolius,** Nutt. Decumbent, diffusely branched; branches filiform; leaves very small, ovate elliptical, serrulate, obtuse, the lower surface, as well as the petioles, strigose; peduncles axillary; flowers few, in a simple corymbose head. — Near St. Mary's, Georgia. — Leaves 3″ – 5″ long. Peduncles 12 – 15-flowered.

7. COLUBRINA, Rich.

Calyx herbaceous, with spreading lobes. Nutlets opening at the apex and down the inner angle. Embryo in thin albumen. Otherwise chiefly as in Ceanothus. — Tropical shrubs, with alternate parallel-veined leaves, and small flowers in close axillary cymes.

1. **C. Americana,** Nutt. Leaves coriaceous, ovate-oblong, entire, the lower surface, as also the branches and calyx, covered with a dense rust-colored pubescence; cyme small, shorter than the petiole; petals spatulate, emarginate, shorter than the calyx; drupe 3-lobed. — South Florida. — Leaves 2′–4″ long. Drupe 4″ in diameter.

2. **C. reclinata,** Brongn. Nearly glabrous; branches pendulous; leaves thin, elliptical, minutely pubescent beneath; peduncles not half the length of the petioles; sepals keeled within; petals yellow, shorter than the sepals; styles 3, distinct. — South Florida. A large tree.

8. GOUANIA, Jacquin. CHAW-STICK.

Calyx 5-cleft, partly adnate to the ovary, the lobes spreading. Petals 5, shorter than the calyx, and inserted on the 5-lobed disk which lines its tube, hooded, and enclosing the short stamens. Ovary 3-celled, 3-ovuled. Style 3-cleft. Drupe dry, 3-lobed or 3-winged, separating from the central axis into three valveless nutlets. Embryo in the axis of thin albumen. — Tropical, chiefly climbing shrubs, with alternate stipulate toothed leaves, and perfect or polygamous flowers in terminal spiked clusters.

1. **G. Domingensis,** L. Branches pubescent; leaves oblong-ovate, tapering into an obtuse point, serrate, petioled; spikes elongated, bearing a tendril at the base; drupe globose, 3-winged. — South Florida. — Leaves 2′–4′ long. Flowers minute, yellow. Lobes of the disk emarginate.

ORDER 39. CELASTRACEÆ. (STAFF-TREE FAMILY.)

Shrubs with simple stipulate leaves, and small regular flowers. — Sepals and petals 4–5, imbricated in the bud. Stamens 3–5, alternate with the petals, and inserted with them on the disk which fills the bottom of the calyx. Ovary free, 1–5-celled, with 1–several erect ovules in each cell. Styles united. Fruit capsular or drupaceous. Seeds often arilled. Embryo in the axis of the albumen. — Flowers perfect or polygamous.

Synopsis.

TRIBE I. **CELASTREÆ.** Sepals and petals 4–5. Stamens 4–5, distinct, inserted on the margins of the disk. Albumen fleshy.

* Fruit a 1-2-seeded drupe.

1. MYGINDA. Ovary 4-celled. Stigmas 4. Drupe 1-seeded. Leaves opposite. Flowers perfect.
2. GYMINDA. Ovary 2-celled. Stigmas 2. Leaves opposite. Flowers diœcious.
3. SCHÆFFERIA. Ovary 2-celled. Stigmas 2. Drupe 2-seeded. Leaves alternate. Flowers diœcious.

* * Fruit a 3–5-valved capsule: seeds arilled.

4. EUONYMUS. Flowers perfect, in axillary cymes. Calyx flat. Leaves opposite.
5. CELASTRUS. Flowers polygamous, in terminal racemes. Calyx cup-shaped. Capsule globose. Leaves alternate.

6. MAYTENUS. Flowers axillary. Calyx flat. Capsule 3-angled. Leaves alternate.
7. PACHYSTIMA. Flowers axillary, perfect. Capsule 2-celled. Leaves opposite.

TRIBE II. **HIPPOCRATEÆ.** Sepals and petals 3–5. Stamens 3, united below, hypogynous. Albumen none.

8. HIPPOCRATEA. Capsule 3-winged. Anthers transversely dehiscent.

1. MYGINDA, Jacq.

Flowers perfect. Sepals 4, united below. Petals 4, roundish. Stamens 4. Ovary 4-celled, with a solitary anatropous ovule in each cell. Style short, 4-cleft. Drupe 1-celled, 1-seeded. Seed erect. Embryo in thin albumen. Cotyledons flat. Radicle inferior. — Tropical shrubs, with small opposite coriaceous leaves, and minute white or reddish flowers on axillary forking peduncles.

1. **M. Rhacoma,** Swartz. Branches slender, pubescent, angled; leaves oblong, obtuse, crenate, nearly sessile, paler and often discolored beneath; peduncles filiform, shorter than the leaves, cymosely 2–4-flowered; calyx lobes round, pubescent; petals oval, concave, ciliate; stigmas spreading; drupe obovate. — South Florida. — A small shrub. Leaves ½′–1′ long, glabrous.

2. **M. ilicifolia,** Lam. Branches terete, pubescent; leaves smooth, round-ovate, spiny-toothed, short-petioled; peduncles shorter than the leaves, umbellately 3–4-flowered; calyx 4-toothed; petals rounded; drupe obovate, pointed with the persistent style. — South Florida. — A small shrub. Leaves ½′–¾′ long.

3. **M. latifolia,** Swartz. Branches 4-angled; leayes elliptical or obovate, obtuse, crenate, smooth, nearly sessile; peduncles few-flowered, forking, ½′ or less long, shorter than the leaves; style distinct, 4-lobed; drupe obovate. — Pine Key, South Florida (*Curtiss*). — Shrub 10°–15° high. Leaves 1′–2′ long. Flowers and drupe red.

2. GYMINDA, Sargent.

Flowers diœcious, tetramerous, cymose. Disk cup-shaped, fleshy, 4-lobed. Ovary 2-celled, with a single suspended ovule in each cell. Stigma sessile, 2-lobed. Drupe 1-seeded. Radicle superior. Embryo large, in thin albumen. — A smooth shrub or small tree, the branchlets 4-angled. Leaves coriaceous, opposite, obovate, short-petioled, the revolute margins obscurely crenate. Cymes axillary, few-flowered. Drupe black.

1. **G. Grisebachii,** Sargent. (Myginda ? latifolia, *1st edit.* M. integrifolia, *HBK.*) — Keys of South Florida.

3. SCHÆFFERIA, Jacq.

Flowers diæcious. Sepals 4, barely united at the base, rounded, 3-furrowed. Petals 4, spatulate-oblong, much longer than the calyx. Stamens 4. Ovary 2-celled. Stigmas 2, sessile. Drupe dry, 2-celled, 2-seeded. Embryo in oily albumen. Radicle inferior. — Shrubs or trees, with alternate leaves, and small greenish flowers in axillary clusters.

1. **S. frutescens,** Jacq. Smooth; leaves obovate-oblong, entire, acute or obtuse; flowers 3 – 5 in a cluster, the slender pedicels arising from a wart-like peduncle; drupe globose. — South Florida. — A small tree with hard and close-grained wood. Leaves 1½′ long, pale green.

4. EUONYMUS, L. Spindle-tree.

Flowers perfect. Calyx flat, 4 – 5-cleft. Petals 4 – 5, spreading. Stamens 4 – 5, very short, inserted with the petals under the broad and fleshy disk which surrounds the ovary. Ovary 3 – 5-celled, with 2 erect or resupinate ovules in each cell. Style very short. Capsule 3 – 5-celled, loculicidally 3 – 5-valved. Seed enclosed in a red pulpy aril. — Erect or trailing shrubs, with 4-angled branches, opposite serrate leaves, and greenish or purplish flowers in axillary peduncled cymes.

1. **E. Americanus,** L. Strawberry Bush. Flowers greenish, pentamerous; peduncles 1 – 3-flowered; capsule warty; leaves short-petioled, varying from ovate or obovate to linear-lanceolate, serrulate. — Low shady woods. May – June. — Shrub 3° – 6° high. Leaves 1′ – 2′ long.

2. **E. atropurpureus,** Jacq. Flowers purple, tetramerous; peduncles many-flowered; capsule smooth; leaves oblong, on rather long petioles, serrulate. — River banks, chiefly in the upper districts. May – June. — Shrub 8° – 12° high. Leaves 2′ – 5′ long. Flowers dark purple.

5. CELASTRUS, L. Staff-tree.

Flowers somewhat diœcious. Calyx cup-shaped, 5-cleft. Petals 5, spreading. Stamens 5, inserted with the petals on the edge of the cup-shaped fleshy disk which fills the tube of the calyx, abortive in the fertile flower. Ovary 2 – 4-celled, the cells 2-ovuled. Style thick. Capsule globose, commonly 3-celled and 3-valved. Seeds 1 – 2 in each cell, enclosed in a fleshy scarlet aril. Embryo in the axis of copious fleshy albumen. — Climbing shrubs, with alternate leaves, and small greenish flowers in axillary or terminal racemes.

1. **C. scandens,** L. Leaves oblong-ovate or obovate, acuminate, serrate, smooth; racemes terminating the branches, nearly simple; capsule orange-colored. — Woods and banks of streams along the mountains of North Carolina. June.

6. MAYTENUS, Juss.

Flowers polygamous. Calyx flat, 5 cleft. Petals 5. Stamens 5, very short, inserted with the petals under the edge of the flat circular disk which envelopes the ovary. Ovary 2 – 3-celled, with a solitary erect ovule at the base of each cell. Style very short and thick. Stigma 2 – 3-lobed. Capsule coriaceous, 1 – 3-celled, loculicidally 2 – 3-valved, yellow within. Seeds 1 – 3, enclosed in a thin pulpy aril. Embryo in the axis of thin fleshy albumen. — Trees or shrubs. Leaves opposite or alternate. Flowers chiefly in axillary clusters.

1. **M. phyllanthoides,** Benth. Leaves fleshy, alternate, oblong-obovate, obscurely crenate and reticulate, glabrous; flowers minute, clustered, apparparently perfect; capsule obovate, 3-angled, 1-celled, 1 – 3-seeded. — South Florida. — Leaves 1′ – 1½′ long.

7. PACHYSTIMA, Raf.

Calyx 4-lobed. Petals and stamens 4, inserted on the edge of the disk that fills the throat of the calyx. Style very short; stigma obscurely 2-lobed. Capsule 2-celled, loculicidally 2-valved, 2 – 4-seeded, the seed arillate. — Low shrubs, with opposite persistent leaves, and minute axillary flowers.

1. **P. Canbyi,** Gray. Leaves oblong-linear, denticulate near the tip; flowers single, or clustered on the common peduncle; petals oblong-ovate. — Rocky cliffs on the mountains of North Carolina and Virginia. — Shrub 1° or more high.

8. HIPPOCRATEA, L.

Calyx small, 5-parted. Petals spreading, valvate or imbricate. Filaments recurved; anthers 1 – 2-celled. Disk expanded. Ovary free. Style short, subulate, 3-cleft. Ovules 2 – 6 in each cell. Carpels 3, united at the base, 2-valved, or indehiscent, few-seeded. Seeds mostly winged. — Climbing shrubs. Cymes or panicles dichotomous.

1. **H. ovata,** Lam. Leaves elliptical-oblong, serrulate; panicles rusty-pubescent, mostly longer than the leaves; petals oblong; carpels oval or roundish. — Borders of the Everglades (*Curtiss*).

ORDER 40. ILICINEÆ. (HOLLY FAMILY.)

Trees or shrubs, with alternate simple leaves, and small white or greenish flowers. — Calyx 4 – 9-toothed. Corolla hypogynous, rotate, 4 – 9-parted, imbricated in the bud. Stamens 4 – 9, alternate with the lobes of the corolla, and inserted on its base: anthers opening lengthwise. Ovary free from the calyx, 4 – 9-celled. Stigma lobed, nearly sessile. Drupe berry-like, composed of 4 – 9 one-seeded nutlets. Seeds anatropous, suspended. Embryo minute, in fleshy albumen.

1. ILEX, L. HOLLY.

Flowers perfect or diœciously polygamous, of 4 – 9 parts. Drupe containing 4 – 9 nutlets. — Leaves evergreen or deciduous. Fertile flowers commonly solitary on the young branches, the sterile ones mostly in sessile or peduncled clusters or cymes.

§ 1. AQUIFOLIUM. — *Parts of the flower* 4: *drupe red: nutlets ribbed or veiny on the back: leaves evergreen.*

1. **I. opaca,** Ait. (HOLLY.) Smooth; leaves oval, concave, wavy and spiny on the margins; sterile flowers cymose, on slender peduncles; calyx lobes acute. — Sandy soil. April – May. — A small tree.

2. **I. Dahoon,** Walt. Young branches, lower surface of the leaves, and clusters more or less pubescent; leaves varying from obovate to oblong-linear, acute or obtuse, mucronate, entire, or sharply serrate above the middle, on short petioles; sterile peduncles many-flowered, the fertile shorter, and mostly 1-flowered; calyx teeth acute; nutlets 3-ribbed on the back. (I. laurifolia, *Nutt.* I. ligustrina, *Ell.*) — Var. MYRTIFOLIA. Leaves small (½′ – 1′), linear-oblong, entire, or, on the young branches, sharply 2 – 4-toothed toward the apex. (I. myrtifolia, *Walt.*) — Margins of swamps and pine barren ponds, South Florida to North Carolina, and westward. April – May. — A handsome shrub or small tree. Leaves 2′ – 3′ long.

3. **I. Cassine,** L. (YAUPON.) — Leaves small (½′ – 1′ long), oval or oblong, obtuse, crenate; clusters very numerous, nearly sessile: calyx lobes minute, obtuse. — Light sandy soil along the coast, Florida to North Carolina. April. — Shrub 8° – 12° high, slender, the short spreading branches often spine-like. Fruit clustered, abundant.

§ 2. PRINOIDES. — *Parts of the flower* 4 – 6 : *drupe red or purple: nutlets* 4 – 6, *ribbed on the back: shrubs: leaves deciduous.*

4. **I. decidua,** Walt. Leaves lanceolate or oblong, obtusely serrate, pubescent on the veins beneath, tapering into a short petiole; flowers on short pedicels, in sessile clusters; calyx teeth smooth, acute. — Varies with the leaves smooth on both sides, and the flowers on longer pedicels. — River swamps. April – May. — A large shrub. Leaves 1′ – 2′ long. Drupe red.

5. **I. ambigua,** Chapm. Branches slender; leaves oval or oblong, acute or somewhat acuminate, finely and sharply serrate, smooth on both sides, or rarely, like the branchlets, softly pubescent; pedicels of the sterile flowers clustered, longer than the petioles; those of the fertile ones very short, solitary; calyx teeth obtuse, ciliate. — Sandy margins of swamps. April. — A shrub or small tree. Leaves 1′ – 4′ long.

6. **I. longipes,** Chapm. Smooth; leaves 1′ – 2′ long, thin, ovate or ovate-lanceolate, mostly acute, slender-petioled, appressed-serrate; peduncles 1′ – 1½′ long, the sterile clustered, the fertile single; calyx lobes acute; style very short. — Rocky woods in the upper districts. May. — Shrub 3° – 6° high.

7. **I. mollis,** Gray. Leaves thin, oval or oblong, acuminate, sharply serrulate, downy; sterile flowers very numerous, in umbel-like clusters, the pedicels shorter than the petiole, soft-downy, like the calyx; fertile peduncles very short. — Mountains of North Carolina and Tennessee.

8. **I. monticola,** Gray. Leaves thin, ovate or lance-oblong, acuminate, smooth, sharply serrate; fertile flowers very short-peduncled; calyx ciliate. (I. ambigua, *Torr.*) — Mountains of North Carolina (*Gray*). — Leaves 3′ – 5′ long.

9. **I. Amelanchier,** M. A. Curtis. Leaves oblong, barely acute at each end, serrulate, pubescent and finely reticulate beneath; fruiting pedicels solitary, as long as the petioles; drupe large, red; nutlets strongly 3-ribbed on the back; calyx teeth acute. — Swamps, Mississippi to North Carolina. — Leaves about 2′ long, 1′ wide. Drupe 3″ – 4″ in diameter.

§ 3. PRINOS. — *Parts of the flower mostly* 6 – 9 : *nutlets smooth and even on the back.*

* *Leaves deciduous : drupe red.*

10. **I. verticillata,** Gray. Leaves (thick) oval, obovate, or wedge-lanceolate, acuminate, rather coarsely serrate, paler and pubescent beneath; flowers all clustered, 6-parted, on short pedicels; fruit abundant. — Low ground. April. — A large shrub. Leaves about 2′ long. Pedicels shorter than the petioles.

11. **I. lanceolata.** Leaves lanceolate, finely and remotely serrate, acute at each end, smooth on both sides, membranaceous; fertile flowers scattered generally in pairs, 6-parted; sterile ones clustered, triandrous; drupes small. (Prinos lanceolatus, *Pursh.*) — Lower districts of Georgia and South Carolina, *Pursh.* June. (*)

* * *Leaves smooth, evergreen : drupe black.*

12. **I. glabra,** Gray. Leaves wedge-oblong or obovate, crenately 2 – 4-toothed near the apex; sterile peduncles many-flowered; the fertile, 1-flowered; flowers all 6 – 9-parted. — Low pine barrens. May. — Shrub 2° – 4° high.

13. **I. lucida,** Torr. & Gray. Leaves oval or oblong-obovate, entire or with sharp scattered teeth, viscid when young; peduncles 1-flowered, the sterile ones mostly clustered, the fertile solitary; flowers 6 – 9-parted. (Prinos coriaceus, *Ell.*) — Wet thickets, Florida, Georgia, and westward. May. — Shrub 4° – 8° high.

ORDER 41. CYRILLACEÆ. (CYRILLA FAMILY.)

Trees or shrubs, with alternate evergreen leaves, without stipules, and perfect white flowers in lateral or terminal racemes. — Calyx of 4 – 5 sepals. Petals 5 – 8, hypogynous, imbricated in the bud. Stamens 5 – 10, inserted with the petals: anthers introrse, opening lengthwise. Ovary 2 – 4-celled, with a single suspended ovule in each cell. Stigma entire or 2 – 4-lobed. Fruit 2 – 4-seeded. Embryo straight in the axis of fleshy albumen. Radicle superior.

1. CYRILLA, Garden.

Calyx small, 5-sepalous, persistent. Corolla 5-petalous, spreading, deciduous. Stamens 5, opposite the sepals, subulate, spreading: anthers oval. Style persistent: stigma 2-lobed. Drupe ovate, 2-celled, 2-seeded; the pericarp spongy. — A smooth shrub or small tree. Leaves entire. Racemes clustered at the base of the branches of the season, rigid, spreading. Flowers small, on short 2-bracted pedicels.

1 **C. racemiflora,** Walt. Leaves oblong or obovate-oblong (2′ – 4′ long), on short petioles; racemes straight, many-flowered; drupe dry, ovate, tipped with the conspicuous slender style, mostly 1-seeded. — Varies with smaller (1′ - 1½′) oblanceolate and more rigid leaves, and the nearly globose

drupe tipped with the short and thick style. — Shady banks, and (the variety) in pine-barren ponds, Florida to North Carolina, and westward. July. — Racemes 3′ – 6′ long.

2. CLIFTONIA, Banks. Titi.

Calyx minute, composed of 5 – 8 scale-like persistent sepals. Petals 5 – 8, obovate, concave, short-clawed, spreading. Stamens mostly 10, in 2 rows; the filaments erect, thick, contracted above the middle; those opposite the petals longer: anthers round. Stigma sessile, 3 – 4-lobed. Drupe dry, 3 – 4-winged, 3 – 4-celled, with a single linear seed in each cell. — A shrub or small tree. Leaves oblong, smooth, and somewhat glaucous. Racemes terminal, many-flowered, with leafy deciduous bracts. Drupes nodding.

1. **C. ligustrina,** Banks. (Mylocarium, *Willd.*) — Pine barren ponds and swamps, Florida and the lower districts of Georgia, westward. March – April. — Leaves 2′ long. Racemes 2′ – 4′ long. Flowers white, fragrant.

Order 42. STAPHYLEACEÆ. (Bladder-nut Family).

Erect shrubs, with opposite pinnate stipulate leaves, and perfect regular pentandrous flowers. — Calyx 5-parted, colored. Petals and stamens 5, perigynous. Ovary 2 – 3-celled. Ovules 1 – 8 in each cell, attached to the central angle of the cell. Fruit capsular or baccate. Seeds bony, truncated at the base. Embryo straight in scanty albumen.

1. STAPHYLEA, L. Bladder-nut.

Flowers perfect. Calyx erect, persistent. Petals obovate, erect, alternate with the sepals, imbricated in the bud. Stamens inserted with the petals on the edge of the 5-lobed disk which fills the base of the calyx. Ovary 3-celled, the cells sometimes separate above, 6 – 8-ovuled. Capsule 3-lobed, membranaceous, inflated, few-seeded. — Leaflets stipellate. Flowers white, in drooping compound racemes.

1. **S. trifolia,** L. Leaves trifoliolate; leaflets ovate, acuminate, serrate, pubescent beneath, the terminal one long-stalked; racemes lateral and terminal; styles 3, connivent; capsule reticulated, 1 – 3 seeded. — Damp woods, in the upper districts. May. — Shrub 10° high. Capsules 2′ long, 1′ in diameter.

Order 43. SAPINDACEÆ. (Soap-berry Family.)

Trees or shrubs, rarely herbs, with exstipulate alternate or opposite leaves, and chiefly irregular 7 – 12-androus flowers, imbricated in the bud. — Calyx 4 – 5-lobed. Petals 4 – 12, inserted with the stamens on a hypogynous or somewhat perigynous disk, rarely none. Anthers opening lengthwise. Ovary 2 – 4-celled, the cells 1 – 2-ovuled. Seeds without albumen. Embryo mostly curved or convolute. Cotyledons incumbent, fleshy.

Synopsis.

Tribe I. **DODONEÆ.** Ovules 2-3 in each cell. Embryo spirally coiled. Cotyledons distinct. — Leaves alternate.

1. DODONÆA. Ovules 2 in each cell. Petals none. Capsule 2-4-winged.

Tribe II. **SAPINDEÆ.** Ovules usually solitary. Embryo curved or straight. Cotyledons distinct. — Leaves alternate.

2. HYPELATE. Ovules 2-3 in each cell. Petals 4-5, regular. Fruit drupaceous.
3. SAPINDUS. Ovules solitary. Petals 5, regular. Fruit baccate.
4. CARDIOSPERMUM. Ovules solitary. Petals 4, irregular. Fruit a bladder-like capsule.

Tribe III. **HIPPOCASTANEÆ.** Ovules 2 in each cell. Embryo roundish. Cotyledons very thick and partly united. Leaves opposite.

5. ÆSCULUS. Calyx 5-lobed. Petals 4-5, unequal. — Leaves digitate.

Tribe IV. **ACERINEÆ.** Ovules 2 in each cell. Embryo coiled or folded. Cotyledons distinct. Styles 2, separate. Fruit a double samara. Leaves opposite.

6. ACER. Flowers polygamous. Leaves simple, palmately nerved.
7. NEGUNDO. Flowers diœcious. Leaves pinnate.

1. DODONÆA, L.

Flowers perfect or polygamous. Calyx 3-5-parted. Petals none. Stamens 5-8; anthers thick, on short filaments. Ovary 3-4-celled, with 2 ovules in each cell; the upper one ascending, the lower pendulous. Styles united. Capsule membranaceous, 2-4-winged, septicidally 2-4-valved, the cells 1-2-seeded. Embryo spirally coiled. — Trees or shrubs, with chiefly simple leaves, and axillary or terminal whitish or greenish flowers.

1. **D. viscosa,** L. Leaves viscid, obovate-oblong, entire, parallel-veined; racemes axillary and terminal, shorter than the leaves; capsule 3-winged, 3-seeded. — South Florida. — Shrubs 6°-10° high. Flowers greenish.

2. HYPELATE, P. Browne.

Calyx 3-5-parted. Petals 4-5, regular. Stamens 6-10, inserted on the inner face of the cup-shaped disk which fills the base of the calyx. Ovary 2-celled, with 2-3 pendulous ovules in each cell. Styles united. Stigma 2-lobed. Drupe globose, 1-2-seeded. Embryo erect. Trees with alternate trifoliolate or abruptly pinnate leaves, and clustered or panicled polygamous flowers.

1. **H. trifoliata,** P. Browne. Leaves trifoliolate; leaflets obovate, coriaceous, glabrous, entire; panicles corymbose, slender, axillary, longer than the leaves, few-flowered; calyx 3-4-parted, pubescent within; petals 4, ciliate; drupe black, 1-seeded. — South Florida. — A small tree, with brittle branches. Leaflets 1′ long, with fine oblique parallel veins. Flowers small, white. Stamens 6-8.

2. **H. paniculata,** Don. Leaves abruptly pinnate; leaflets 2 or 4, oblong, obtuse, entire, smooth, opposite; panicles axillary and terminal, with compressed branches; flowers hoary-tomentose; calyx lobes and petals 4, rounded; cells of the ovary 2-ovuled. — South Florida. — Branches purplish, dotted with white. Leaflets 2′-3′ long.

3. SAPINDUS, L. Soap-berry.

Calyx 5-parted, deciduous. Petals 5, regular, with a scale at the base of each within. Stamens 8 – 10, inserted on the hypogynous disk. Styles united. Stigmas 3. Ovary 3-celled, the cells 1-ovuled. Fruit baccate, globose or 2 – 3-lobed, 1 – 3-seeded. Seeds bony. Embryo incurved. — Trees, with abruptly pinnate leaves, and small polygamous flowers in axillary or terminal racemes or panicles.

1. **S. marginatus,** Wild. Petioles wingless; leaflets 9 – 18, opposite or alternate, ovate-lanceolate, unequal-sided, strongly veined above; panicles large, dense-flowered; fruit globose. — Georgia and Florida, near the coast, and westward. — A tree 20° – 40° high. Flowers white.

2. **S. Saponaria,** L. Petioles broadly winged; leaflets 6 or 8, nearly opposite, rather rigid, oblong, obtuse, mostly equal-sided, pubescent beneath; panicle tomentose, canescent; fruit globose. — Coast of South Florida. — A small tree.

4. CARDIOSPERMUM, L.

Sepals 4, the 2 outer ones much shorter. Petals 4, irregular, each with a petal-like scale at the base within; those of the 2 outer petals entire, the others with a crested appendage on the inner edge. Stamens 8. Disk 2-glandular. Cells of the ovary 1-ovuled. Style 3-cleft. Capsule 3-angled, 3-celled, loculicidally 3-valved, inflated. Seed furnished with a cordate aril. — Herbs, climbing by tendrils. Leaves biternate.

1. **C. Halicacabum,** L. — South Florida, apparently native, and not uncommon in cultivation. — Annual. Stem slender. Leaflets ovate-lanceolate, incisely lobed and toothed. Capsule pear-shaped, 1′ in diameter

5. ÆSCULUS, L. Horsechestnut.. Buckeye

Calyx 5-lobed, unequal. Petals 4 – 5, unequal, clawed. Stamens 5 – 8, usually 7, inserted on the annular hypogynous disk. Style slender. Ovary 3-celled, the cells 2-ovuled. Capsule coriaceous, 1 – 3-celled, loculicidally 2 – 3-valved, 1 – 3-seeded. Cotyledons very large and thick, partly united. — Trees or shrubs, with opposite long-petioled digitate leaves, and showy polygamous flowers, in terminal panicles.

§ 1. Æsculus proper. — *Fruit prickly.*

1. **Æ. glabra,** Willd. Stamens almost twice the length of the erect nearly equal pale yellow petals; panicle oblong-ovate, loosely flowered; leaflets 5, oval or oblong, acuminate, unequally serrulate, smooth or slightly pubescent beneath. (Æ. pallida, *Willd.*) — Banks of rivers, Tennessee. May – June. — A small tree with rough strong-scented bark. Flowers small.

§ 2. Pavia. — *Fruit smooth.*

2. **Æ. Pavia,** L. Stamens slightly exserted; claws of the two upper petals as long as the tubular calyx; panicle oblong; leaflets 5, varying from lanceolate to oval, short-acuminate, finely serrate, smooth, or nearly so, on both surfaces. — Rich soil. March – May. — A shrub, or in the upper districts a small tree. Flowers red.

3. **Æ. flava,** Ait. Stamens included; claws of the lateral petals longer than the tubular-campanulate calyx; panicle oblong, pubescent; leaflets 5 – 7, obovate-oblong, acuminate, finely serrate, pubescent beneath. — Rich soil, in the middle and upper districts of Georgia to North Carolina. April – May. — A shrub or small tree. Flowers pale yellow. Æ. discolor, *Pursh*, is a form of this species with more strongly serrate leaflets, and flesh-colored or dull purple flowers.

4. **Æ. parviflora,** Walt. Stamens 3 times as long as the corolla; claws of the nearly similar petals longer than the obconical calyx; panicle racemose, very long; leaflets 5 – 7, oval-obovate, tomentose beneath. — Upper districts of Georgia and South Carolina. April – May. — Shrub 3° – 9° high. Flowers white. Stamens 6 or 7.

6. ACER, L. MAPLE.

Flowers polygamous. Petals usually 5 – 8, or none. Stamens 4 – 12. — Leaves simple, palmately lobed. Flowers clustered or racemose.

* *Flowers in terminal racemes, appearing after the leaves.*

1. **A. Pennsylvanicum,** L. (STRIPED MAPLE.) Racemes simple, drooping; flowers (15 – 25) large; petals obovate; leaves slightly cordate, with 3 acuminate finely serrate lobes; samara large. (A. striatum, *Lam.*) — Banks of mountain streams, Georgia and Carolina. May. — A shrub or small tree, with striped bark. Flowers greenish.

2. **A. spicatum,** Lam. (MOUNTAIN MAPLE.) Racemes compound, erect; flowers small, very numerous; petals linear-spatulate; leaves cordate, 3-lobed, coarsely serrate; samara small. — With the preceding. — Shrub 6° – 10° high. Leaves pubescent beneath.

* * *Flowers on long and drooping umbellate or corymbose pedicels, developed from lateral and terminal buds.*

3. **A. saccharum,** Marsh., var. **barbatum,** Trelease. Leaves 2′ – 4′ wide, paler beneath, truncate, or cordate with a shallow sinus, 3-lobed, the lobes entire, contracted and acuminate above the middle, slender-petioled; wings 6″ – 9″ long, divergent, the pedicels long and mostly dichotomous; calyx and ovaries bearded. — Rocky banks, Georgia, Tennessee, and westward. March – April.

4. **A. Floridanum,** Chapm. Leaves smooth and shining above, downy and canescent beneath, 2′ – 4′ wide, truncate and slightly cordate at the base, 3 – 5-lobed, the lobes short, obtuse, and mostly 3-toothed; wings nearly erect; calyx bearded. (Var. acuminatum, *Trelease*, the leaves green on both sides, the lobes acuminate.) — Rocky woods, Florida and westward, the var. in the upper districts.

* * * *Flowers on short and erect clustered pedicels, developed from lateral buds, and appearing before the leaves: fruiting pedicels long and drooping.*

5. **A. dasycarpum,** Ehrh. (SILVER MAPLE.) Leaves cordate, 3 – 5-lobed, sharply toothed and serrate, white beneath; petals none; samara large, woolly when young. — Banks of rivers. Feb. – March. — A tree 30° – 50° high, with soft wood. Flowers yellowish.

6. **A. rubrum,** L. (RED OR SWAMP MAPLE.) Leaves 3–5-lobed, or undivided, smooth or pubescent, either cordate or rounded, or sometimes acute at the base, toothed and serrate, white beneath; petals oblong or linear; samara small, smooth. — Swamps. Feb.–March. — A small tree. Flowers and fruit red.

7. NEGUNDO, Mœnch. ASH-LEAVED MAPLE.

Flowers diœcious. Calyx minute. Petas none. Stamens 4–5, hypogynous, — A small tree, with smooth green bark. Leaves pinnately 3–5-foliolate, the leaflets ovate or oblong, lobed or toothed. Flowers small, greenish; the sterile ones on long and drooping clustered pedicels, the fertile ones racemose, both from lateral buds appearing with or before the leaves.

1. **N. aceroides,** Mœnch. — River banks. March–April.

ORDER 44. MALPIGHIACEÆ. (MALPIGHIA FAMILY.)

Trees or shrubs, with opposite simple dotless and mostly stipulate leaves, and regular racemose or corymbose flowers on usually jointed pedicels. — Calyx 5-parted. Petals 5, alternate with the calyx lobes, unguiculate, sometimes wanting. Stamens 10, alternate with the petals, and inserted with them on a hypogynous disk: anthers roundish. Ovary solitary, mostly 3-lobed, consisting of three more or less united carpels. Styles 3, distinct or united. Fruit composed of one to three 1-seeded cells or carpels. Seeds pendulous, without albumen. Cotyledons thick or leafy.

1. BYRSONIMA, Rich.

Calyx with 10 glands at the base without. Petals 5. Stamens monadelphous at the base. Styles 3. Fruit drupaceous, 3-celled, 3-seeded. — Racemes terminal, simple or branched.

1. **B. lucida,** Rich. Smooth; stem much-branched; leaves coriaceous, wedge-obovate, obtuse, entire, short-petioled, shining above, paler beneath, veinless; racemes erect, bracted, simple, twice the length of the leaves; pedicels slender, spreading; petals yellow, orbicular-cordate, wavy, long-clawed; drupe smooth, globose. — South Florida. — A small shrub. Leaves 1′ long. Drupe as large as a grain of pepper.

ORDER 45. POLYGALACEÆ. (MILKWORT FAMILY.)

Herbs or shrubs, with entire exstipulate leaves, and irregular hypogynous monadelphous or diadelphous flowers. — Anthers 1-celled, opening by a terminal pore. Ovary 2-celled, with a single anatropous pendulous ovule in each cell. Seeds often carunculate. Embryo straight in scanty albumen. Radicle superior.

1. POLYGALA, L. MILKWORT.

Sepals 5, persistent, unequal; the two lateral ones (*wings*) larger and petal-like. Petals 3, more or less united; the middle one (*keel*) larger, and usually crested at the apex. Stamens 8, rarely 6, united into a tube, or into two equal sets, and also with the claws of the petals. Style curved, clavate. Stigma terminal or lateral. Capsule 2-celled, 2-seeded. Seeds suspended, carunculate. — Chiefly herbs. Leaves alternate or whorled. Flowers in terminal spikes or racemes, rarely axillary, or radical and incomplete.

§ 1. *Flowers in globose or oblong more or less compact spikes.*
Spikes corymbose: biennials.

1. **P. cymosa,** Walt. Stem tall, simple; leaves scattered, linear, acute, the upper bract-like, the lowest long (6′ – 9′) and crowded; corymbs simple or compound; wings oblong, abruptly acute; seeds minute, globose-obovate, smooth; caruncle none. — Pine barren ponds. July. — Stems 2° – 4° high. Flowers yellow.

2. **P. ramosa,** Ell. Stem low, simple, or branching and leafy from the base to the summit; leaves fleshy, lanceolate, acute, scattered, the lowest spatulate-obovate, obtuse, crowded; corymbs compound, fastigiate; wings ovate-lanceolate, acuminate; lobes of the caruncle small, roundish, embracing the base of the minute oval hairy seed. — Low open pine barrens. July – Sept. — Stems 6′ – 12′ high. Flowers yellow.

3. **P. Baldwinii,** Nutt. Stem angled, simple; leaves lanceolate, acute, the lowest spatulate; corymbs compound; spikes dense; wings ovate-lanceolate, tapering into a long and slender point; seeds very small, globose, hairy; caruncle minute. — Low pine barrens near the coast, Georgia, and westward. July – August. — Stem 1° – 1½° high. Leaves ½′ – 1′ long. Flowers white, fragrant.

* * *Spikes solitary: leaves alternate.*

+ *Flowers yellow: biennials.*

4. **P. lutea,** L. (YELLOW BACHELOR'S-BUTTON.) Stem simple or with spreading branches; leaves lanceolate, acute, the lowest clustered, spatulate-obovate, obtuse; spikes dense, globose or oblong; wings elliptical, abruptly pointed; lobes of the caruncle nearly as long as the obovate sparse-hairy seed. — Low pine barrens. June – August. — Stem 6′ – 12′ high. Flowers orange-yellow.

5. **P. nana,** DC. Low; stems divided at the base into several short peduncle-like branches; leaves chiefly radical, clustered, spatulate or linear, obtuse; spikes thick, at length cylindrical, the earliest ones sessile; wings ovate-lanceolate, acuminate; lobes of the caruncle half as long as the obovate hairy seed. — Low sandy pine barrens, flowering throughout the year. — Stems 2′ – 4′ high. Spikes 1′ – 2′ long.

6. **P. Rugelii,** Shuttlw. Stem mostly branching; leaves alternate, lanceolate, acute, sessile, the lowest ones clustered and narrowed into a petiole; spikes globose; wings oblong-obovate, cuspidate; seeds and caruncle as in No. 4. — Flat pine barrens, East Florida. May – August. — Stem 1° – 2° high.

7. **P. Reynoldsiæ,** Chapm. Stems stout, at length branching above (1° or more high); leaves lanceolate (1′ long), the lowest clustered, spatulate; flowers large, yellow, scattered in a long (6′ or more) stout terminal raceme; wings elliptical, mucronate; caruncle as long as the hairy oval seed. — St. Augustine, East Florida (*Miss Reynolds*). — Anomalous among the yellow-flowered species, but may prove to be a form of the preceding.

+ + *Flowers purple or rose-color: annuals: stems branching.*

8. **P. sanguinea,** L. Leaves oblong-linear, acute; spikes ovate or roundish, obtuse; flowers imbricated; wings broadly ovate, obtuse, sessile; lobes of the caruncle rather shorter than the pear-shaped sparse-hairy seed. — Low grounds, North Carolina. July – Sept. — Stems 1° high. Flowers reddish purple. Bracts persistent.

9. **P. fastigiata,** Nutt. Stems slender, at first simple; leaves narrow-linear, acute; spikes globose, obtuse; wings oblong-obovate tapering into a distinct claw at the base; caruncle as long as the stalk of the sparse-hairy pear-shaped seed. — Low pine barrens, Florida to North Carolina, and westward. July – Oct. — Stems 10′ – 15′ high. Leaves erect. Flowers small, bright rose-color. Bracts deciduous.

10. **P. Nuttallii,** Carey. Leaves short, linear, obtuse; spikes oblong, acute, dense; wings short, elliptical, slightly clawed; lobes of the caruncle collateral, one third as long as the obovate very hairy seed. — Dry sandy soil, Georgia to North Carolina. August. — Stem 4′ – 8′ high, the branches fastigiate. Spikes and greenish and purple flowers smaller than in No. 9. Bracts persistent.

11. **P. Curtissii,** Gray. Stem slender; leaves alternate, narrow-linear; racemes long, loosely flowered; wings narrowly oblong, erect, twice as long as the capsule; seeds and caruncle as in No. 12. — Upper districts. July – August. — Stem 9′ high. Flowers rose-color. Bracts persistent.

12. **P. Chapmanii,** Torr. & Gray. Stems slender, at length sparingly branched; leaves scattered, narrow-linear, acute; spikes long, lanceolate, acute, loose-flowered; wings obovate, short-clawed; lobes of the caruncle spreading, as long as the stalked base of the pear-shaped very hairy seed. — Low pine barrens near the coast, West Florida, and westward. June – August. — Stems 1° – 1½° high. Spikes 1′ – 2′ long. Flowers bright purple. Bracts persistent.

13. **P. incarnata,** L. Stem often simple, glaucous; leaves scattered, linear, fleshy, sometimes minute and subulate; spikes lanceolate, acute, dense flowered; petals united into a tube which is twice as long as the elliptical wings, conspicuously crested; caruncle spongy, as long as the stalk of the oval hairy seed. — Dry sandy soil. June – August. — Stem 1° – 2° high. Bracts deciduous. Flowers, and often the rachis, purple.

14. **P. setacea,** Michx. Stems simple or sparingly branched, slender; leaves minute, scale-like; spikes oblong, dense-flowered, acute; wings oblong, acute, as long as the petals; caruncle and seeds as in the preceding. — Low pine barrens, Florida to North Carolina, and westward. May – July. — Stem 1° high. Spikes ½′ – 1′ long. Flowers pale rose-color or whitish. Bracts deciduous.

* * * *Spikes solitary : leaves whorled : flowers purple.*

15. **P. cruciata,** L. Stem erect, 4-angled, simple or branched; leaves in fours, linear or oblong-linear, thick, obtuse, the upper ones alternate; spikes large, ovate, becoming cylindrical, short-peduncled; wings ovate, tapering into a long subulate point; lobes of the caruncle linear, collateral, as long as the smoothish oval seed. — Pine barren swamps. July – Oct. — Stem 6′ – 12′ high. Spikes 1′ – 2′ long, ¾′ thick. Flowers pale rose-color. Bracts persistent.

16. **P. brevifolia,** Nutt. Stem weak, 4-angled, with long and spreading branches; leaves thin, lanceolate or linear, acute, the lower ones in fours; spikes small, ovate, long-peduncled; wings lanceolate-ovate, barely pointed; caruncle as long as the obovate hairy seed. — Bogs, in the lower districts. July – Oct. — Stem 1° – 1½° long. Spikes scarcely half as large as in the preceding. Flowers reddish purple. Bracts persistent.

17. **P. Hookeri,** Torr. & Gray. Stems short, weak, much branched, 4-angled; leaves in fours, short, linear, acutish; spikes long-peduncled, ovate-lanceolate, acuminate, loose-flowered; wings erect, lanceolate-ovate,. acute; caruncle as long as the ovoid sparse-hairy and viscid seed. — Low grassy pine barrens, West Florida and westward. July – Sept. — Stems 6′ – 10′ high. Leaves 4″ – 6″ long; Flowers pale rose-color. Bracts persistent.

§ 2. *Flowers in slender racemes or spikes.*

* *Leaves alternate.*

18. **P. grandiflora,** Walt. Pubescent; stems branching; leaves lanceolate; flowers large, crestless, scattered in long racemes; fruiting pedicels drooping; wings large, orbicular, erect; caruncle enclosing the stalk of the oblong hairy seed. — Varies with smoothish linear leaves, and smaller flowers. — Dry light soil, Florida to South Carolina, and westward. July – Sept. ♃ — Stem 1° high. Racemes 3′ – 6′ long, often lateral by the prolongation of the stem. Flowers bright purple, turning greenish.

19. **P. polygama,** Walt. Smooth; stems numerous, simple; leaves oblong-linear, the lowest spatulate or obovate; flowers of two kinds, one kind showy and perfect, borne in a loose terminal raceme, the other imperfect, but fruiting, in radical (rarely axillary) spikes; wings obovate; caruncle half as long as the obovate very hairy seed. — Wet or dry sandy barrens, May – June. ② — Stems 6′ – 12′ high, very leafy. Racemes 2′ – 6′ long. Flowers purple.

20. **P. Senega,** L. (SENECA SNAKEROOT.) Stems several from a thick woody root, erect or ascending, simple, or branching above; leaves numerous, lanceolate, the upper ones acute (1′ long); spike cylindrical, peduncled; wings round obovate, as long as the capsule; lobes of the caruncle linear, as long as the obovate hairy seed. — Var. LATIFOLIA, Torr. & Gray. Stem taller (1° – 1½°); leaves large (2′ – 4′ long), ovate or ovate-lanceolate, acute or acuminate at each end. — Dry rocky woods in the upper districts; the variety in Tennessee. May – June. ♃ — Stems 8′ – 12′ high. Spikes 1′ – 1½′ long. Flowers greenish white.

21. **P. alba,** Nutt. Stems several from a somewhat woody root, erect or ascending, angular, at length branched above; leaves linear, narrowed toward the base; spike long-peduncled, linear-lanceolate, acuminate; flowers short-pedicelled; wings oval, rather longer than the capsule; lobes of the caruncle shorter than the oblong-obovate very hairy seed. — Alabama and westward. — Stems ½° - 1° high. Spikes 1′ - 3′ long. Flowers white. Bracts deciduous.

22. **P. leptocaulis,** Torr. & Gray. Annual; stem very slender, branching, 1° - 2° high; leaves ½′ long, scattered, linear, spikes very slender, 2′ - 3′ long, loosely flowered; wings pale purple, elliptical-obovate, as long as the oblong capsule; seeds very hairy; caruncle minute. — Mississippi, and westward.

∗ ∗ *Leaves whorled: flowers small, greenish or white, in slender spikes.*

23. **P. Boykinii,** Nutt. Perennial; stems numerous, angled, simple or sparingly branched; leaves 4 - 5 in a whorl, the lower ones oblong-obovate, the upper lanceolate and scattered; spike linear, long-peduncled; wings obovate, as long as the capsule; caruncle half as long as the oblong-obovate curved and very hairy seed. — Rich calcareous soil, Florida, Georgia, and westward. May - July. ♃ — Stems 1° - 2° high. Leaves 1′ long. Spikes 2′ - 3′ long. Flowers white.

24. **P. verticillata,** L. Annual; stems low, 4-angled, much branched; leaves 4 - 5 in a whorl, linear, acute, the upper ones scattered; spikes lanceolate; wings roundish, as long as the capsule; lobes of the caruncle half as long as the oblong hairy seed. — Dry sandy soil. June - August. — Stem 4′ - 8′ high. Spikes ½′ - 1′ long. Flowers greenish white.

25. **P. ambigua,** Nutt. Very closely allied to the preceding, but taller (6′ - 15′ high), the branches erect; leaves usually broader, only the lower ones verticillate; spikes more slender, more loosely flowered; wings white. — Gravelly hills in the upper districts. May.

26. **P. leptostachys,** Shuttlw. Annual; stems filiform or setaceous, simple, or branched above, straight; leaves 4 - 5 in remote whorls, narrow-linear or filiform, acute; spike linear, long-peduncled; wings oval, nearly sessile, smaller than the capsule; caruncle half as long as the smooth curved clavate-obovate seed. — Dry sand hills, Florida. May - August. — Stems 10′ - 15′ high. Flowers greenish.

§ 3. *Flowers axillary, and with imperfect radical ones, as in No.* 19.

27. **P. paucifolia,** L. Perennial; flowering stems erect, simple, leafy at the summit; leaves large, ovate, alternate, narrowed into a petiole, the lower ones bract-like; flowers (1 - 3) peduncled, crested, very large; wings obovate; lobes of the caruncle subulate, varying in length; seeds hairy; radical spikes bracted. — Mountains of Georgia and Carolina. May. — Stems 4′ - 6′ high, from a long prostrate base. Flowers ¾′ long, purple.

ORDER 46. KRAMERIACEÆ. (RHATANY FAMILY.)

Silky-pubescent herbs or shrubs, with diffuse stems, alternate leaves, and irregular hypogynous purplish flowers, on axillary 2-bracted and jointed peduncles. — Sepals 5, colored, deciduous. Petals 5, shorter than the sepals; the 3 posterior ones long-clawed, often united; the 2 anterior broad, sessile and fleshy. Stamens 4, the posterior ones distinct or united. Anthers 2-celled, opening by a terminal pore. Ovary 1-celled, 2-ovuled. Fruit 1-seeded, woody, indehiscent, armed with hispid prickles. Albumen none. Radicle concealed in the cotyledons.

1. KRAMERIA, Loefl.

Characters of the order.

1. **K. lanceolata,** Torr. Herbaceous; stems slender, prostrate, mostly branching; leaves lanceolate or linear, acute; peduncles longer than the leaves, leafy-bracted above the middle; claws of the posterior petals, and stamens, united; fruit globose, downy, armed with few strong spreading spines. — Dry sandy soil, Florida, and westward. — Root long and woody. Stems 1° long.

ORDER 47. LEGUMINOSÆ. (PULSE FAMILY.)

Herbs, shrubs, or trees, with chiefly compound alternate stipulate leaves, and papilionaceous or regular perigynous or hypogynous flowers. — Sepals 5, more or less united. Petals 5, rarely fewer, or none. Stamens monadelphous, diadelphous, or distinct. Ovary simple, free, forming a legume in fruit. Seeds without albumen. Leaves almost always with entire margins.

Synopsis.

SUBORDER I. PAPILIONACEÆ. Corolla of 5 (rarely fewer) irregular petals, inserted on the base of the calyx, rarely perigynous, imbricated in the bud, mostly papilionaceous; viz. one upper and exterior, termed the *vexillum* or *standard;* two lateral, called *wings;* and two lower and interior, oftener united by their contiguous margins, forming together the *keel.* Stamens 10 (rarely 5), separate, monadelphous, or diadelphous (9 & 1, or 5 & 5). Legume 1-celled (sometimes partly 2-celled by the introversion of the sutures), or several-celled by transverse partitions. Style simple. Cotyledons thick.

TRIBE I. **LOTEÆ.** Corolla papilionaceous. Stamens 10 (except No. 8). Logume continuous (not jointed). Cotyledons leafy in germination. — Stems (except No. 12) not twining nor climbing.

* Stamens monadephous: anthers of 2 forms. Leaves simple, or palmately compound.

1. CROTALARIA. Calyx 5-lobed. Legume inflated. Upper stipules decurrent.
2. LUPINUS. Calyx 2-lipped. Legume flattened. Stipules not decurrent.

* * Stamens diadelphous: anthers alike. Leaves trifoliolate, rarely palmate or pinnate, the earliest ones alternate.

3. MEDICAGO. Legume membranaceous, curved or coiled, 1-many-seeded. Flowers racemed.

4. MELILOTUS. Legume coriaceous, straight, rugose or veined, 1-4-seeded. Flowers racemed or spiked.
5. TRIFOLIUM. Legume smooth, membranaceous, 1-4-seeded. Flowers capitate.
6. HOSACKIA. Legume straight, many-seeded. Peduncle 1-3-flowered.

* * * Stamens monadelphous or diadelphous. Legume mostly 1-seeded and indehiscent. Plants dotted with small dark glands. Earliest leaves opposite.

+ Legume included in the calyx.

7. PSORALEA. Corolla papilionaceous. Stamens 10, diadelphous: half of the anthers often imperfect.
8. PETALOSTEMON. Stamens 5, united into a cleft tube, and adnate to the claws of four of the nearly regular petals.
9. DALEA. Stamens 9 or 10, the tube partly adnate to the claws of the petals.

+ + Legume exserted.

10. AMORPHA. Stamens 10, monadelphous. Wings and keel none.

* * * * Stamens mostly diadelphous. Legume 1-many-seeded, 1-celled, 2-valved. Leaves pinnate.

+ Trees or shrubs.

11. ROBINIA. Legume flat and thin, margined on one edge. Trees or shrubs.
12. WISTARIA. Legume nearly terete, coriaceous, contracted between the seeds. Twining shrubs.

+ + Herbs.

13. TEPHROSIA. Calyx 5-cleft. Vexillum large. Legume compressed, many-seeded. Leaves unequally pinnate.
14. INDIGOFERA. Calyx minute, 5-cleft. Vexillum small. Legume terete or angled, 2-many-seeded. Leaves unequally pinnate.
15. SESBANIA. Calyx 5-toothed. Legume very long and slender, many-seeded. Leaves abruptly pinnate.

* * * * * Stamens diadelphous. Legume 2-celled lengthwise, or 1-celled, with one of the sutures turned inward. Leaves pinnate.

16. ASTRAGALUS. Stamens 10, diadelphous. Legume tumid.

TRIBE II. **VICIEÆ.** Stamens diadelphous (9 & 1). Legume 2-valved, not jointed. Cotyledons thick and fleshy, remaining under ground in germination. — Climbing vines; the petioles of the pinnate leaves ending in a tendril.

17. VICIA. Style filiform, bearded at the apex, or on the side facing the keel.
18. LATHYRUS. Style flattened, bearded on the side facing the vexillum.

TRIBE III. **HEDYSAREÆ.** Stamens monadelphous or diadelphous. Legume separating transversely into 1-seeded indehiscent reticulated joints, or 1-jointed. — Stems not twining.

* Flowers yellow.

19. ÆSCHYNOMENE. Leaves pinnate. Stamens diadelphous (5 & 5). Flowers perfect.
20. ZORNIA. Leaves palmately compound. Legume 2-5-jointed. Flowers perfect.
21. STYLOSANTHES. Leaves trifoliolate. Anthers of 2 forms. Flowers monœcious.
22. CHAPMANIA. Leaves pinnate. Anthers alike. Flowers monœcious.

* * Flowers white or purplish.

23. LESPEDEZA. Legume 1-jointed. Peduncles axillary.
24. DESMODIUM. Legume 2-6-jointed. Bristly. Racemes terminal.

TRIBE IV. **PHASEOLEÆ.** Stamens monadelphous or diadelphous (9 & 1). Legume 2-valved, not jointed. Cotyledons thick and fleshy; usually raised above ground in germination. — Chiefly twining vines.

* Ovary 1-2-ovuled.

25. RHYNCHOSIA. Legume oblong. Flowers yellow. Leaves trifoliolate.

* * Ovary few- or many-ovuled.

+ Keel spirally twisted.

26. APIOS. Leaves pinnate, not stipellate.
27. PHASEOLUS. Leaves trifoliolate, stipellate.

+ + Keel straight. Leaves trifoliolate (except one species of Galactia).

++ Legume terete, torulose.

28. VIGNA. Flowers yellow. Vexillum roundish. Stems twining.
29. ERYTHRINA. Flowers scarlet. Vexillum narrow, elongated. Stems erect.

++ ++ Legume flattened.

= Bracts opposite. Vexillum very large.

30. CLITORIA. Calyx tubular, 5-toothed. Vexillum spurless at the base.
31. CENTROSEMA. Calyx short, 5-cleft. Vexillum spurred at the base.

= = Bracts alternate.

32. AMPHICARPÆA Calyx 4-5-toothed. Flowers of two kinds. Bracts persistent.
33. GALACTIA. Calyx 4-cleft. Bracts deciduous. Legume linear.
34. CANAVALIA. Stamens monadelphous. Calyx bilabiate. Hilum linear. Legume three-ridged on the back.
35. DIOCLEA. Stamens diadelphous (9 & 1). Calyx 4-cleft. Hilum linear.

TRIBE V. **DALBERGIEÆ.** Stamens 10, monadelphous or diadelphous. Legume indehiscent. Cotyledons thick and fleshy. — Trees or shrubs.

36. PISCIDIA. Legume compressed, 4-winged. Leaves pinnate.
37. ECASTAPHYLLUM. Legume flat, orbicular, 1-seeded. Leaves 1-foliolate.

TRIBE VI. **SOPHOREÆ.** Stamens 10, separate. Legume not jointed. — Erect herbs, shrubs, or trees.

* Legume dehiscent.

38. BAPTISIA. Stamens deciduous. Legume inflated, stipitate, few-seeded. Leaves simple or trifoliolate.
39. THERMOPSIS. Stamens persistent. Legume nearly sessile, flattened, many-seeded Leaves trifoliolate.
40. CLADRASTIS. Stamens persistent. Legume flat, few-seeded. Leaves pinnate. Tree.

* * Legume indehiscent.

41. SOPHORA. Legume moniliform. Leaves pinnate. Shrubs.

SUBORDER II. CÆSALPINIEÆ. Corolla irregular and somewhat papilionaceous, or almost regular, imbricated in the bud; the upper petal interior. Stamens separate. Embryo straight.

42. CERCIS. Flowers perfect, somewhat papilionaceous. Calyx 5-toothed. Leaves simple.
43. CASSIA. Flowers perfect, irregular. Calyx deeply 5-parted. Anthers dissimilar. Leaves pinnate.
44. GLEDITSCHIA. Flowers polygamous, almost regular. Calyx 3-5-parted. Leaves pinnate and bipinnate.
45. GYMNOCLADUS. Flowers polygamous, regular. Calyx funnel-shaped. Stamens 10. Legume linear. Leaves pinnate.
46. CÆSALPINIA. Flowers perfect, irregular. Calyx cup-shaped. Stamens 10. Legume broad. Leaves bipinnate.
47. PARKINSONIA. Flowers perfect, irregular. Calyx cup-shaped. Stamens 10. Legume linear. Leaves pinnate.

SUBORDER III. MIMOSEÆ. Corolla regular, hypogynous, valvate in the bud. Stamens distinct or united, often very numerous, inserted with the petals. Embryo straight. — Leaves pinnate, or 2-3-pinnate. Flowers polygamous.

* Flowers perfect, and staminate. Petals mostly united.

+ Herbs. Leaves sensitive.

48. **MIMOSA.** Legume broad, flat, jointed. Stamens 4-5.
49. **SCHRANKIA.** Legume linear, angular, jointless. Stamens 8-10.

+ + Trees or shrubs.

50. **PITHECOLOBIUM.** Legume coiled or twisted. Leaflets 4, large.
51. **ACACIA.** Legume straight or bent. Leaflets numerous, small.

* * Flowers perfect and neutral. Petals distinct.

52. **DESMANTHUS.** Sterile filaments filiform or petal-like. Stamens 5 or 10.

SUBORDER I. PAPILIONACEÆ. PULSE FAMILY.

1. CROTALARIA, L. RATTLE-BOX.

Calyx 5-parted. Vexillum cordate: keel falcate. Stamens monadelphous. Anthers alternately oblong and roundish. Legume inflated, oblong, many-seeded. — Chiefly herbs, with simple or compound leaves; the stipules often broad, decurrent, inversely sagittate. Racemes mostly opposite the leaves. Flowers yellow. Legumes dark purple.

* *Leaves simple.*

1. **C. sagittalis,** L. Annual; stems low, branching, villous or hairy; leaves nearly sessile, oval or oblong, hairy; racemes short, 2-3-flowered. — Barren sandy soil. June-July. — Stem 3′-6′ high. Racemes 2′-3′ long.

2. **C. ovalis,** Pursh. Perennial; stems several, branching, prostrate or ascending, rough with appressed hairs; leaves short-petioled, oval or oblong, hairy; racemes long, 3-6-flowered. — Dry pine barrens. May-July. — Stem 6′-12′ high. Racemes 4′-6′ long. Flowers distant.

3. **C. Purshii,** DC. Perennial; stems slender, erect, roughened with scattered appressed hairs; leaves thick, smooth above, the lower ones oblong, the upper linear; racemes long, 5-10-flowered. — Flat grassy pine barrens in the lower districts. May-June. — Stem 12′-18′ high. Racemes 6′-12′ long. Flowers distant.

4. **C. retusa,** L. Annual; stem erect; leaves cuneate-oblong, retuse, glabrous above, silky-pubescent beneath, pellucid-dotted; stipules minute or none; racemes terminal, many-flowered; legumes oblong, glabrous. — South Florida. — Stem 1°-2° high. Flowers large.

5. **C. maritima,** Chapm. Perennial?, silky-pubescent; stem decumbent, excessively branched; leaves exstipulate, varying from oblong to linear, nearly sessile, more or less succulent; racemes very numerous, opposite the leaves, 2-4-flowered; sepals lanceolate, as long as the small petals; legume oblong, glabrous. — Coast and Keys of South Florida. May.

* * *Leaves trifoliolate.*

6. **C. pumila,** Ortega. Shrubby or perennial; stem slender, decumbent; leaflets small, cuneate, emarginate, longer than the petiole; peduncles longer than the leaves, few-flowered; corolla small; legume oval, pubescent, few-seeded. — Sandy beach at Casey's Pass, South Florida. Oct. — Stem 2°-3° long.

7. **C. incana,** L. Annual, tall, much branched, pubescent; leaves long-petioled; leaflets round-obovate; racemes stout, many-flowered; keel of the corolla tomentose on the margins; legume oblong, hairy. — South Florida, near the coast. — Stems 2° - 4° high.

2. LUPINUS, Tourn. LUPINE.

Calyx 2-lipped, 5-toothed. Vexillum with the sides reflexed. Keel falcate, acute. Stamens monadelphous, with alternate anthers oblong and roundish. Legume oblong, compressed, many-seeded; the seeds often separated by cellular partitions. — Herbs, with simple or palmately 5 - many-foliolate leaves, and showy flowers in terminal racemes.

1. **L. perennis,** L. Stem pubescent, erect; leaves palmately 7 - 9-foliolate; leaflets obovate-oblong, obtuse, more or less hairy; stipules minute; racemes long, loosely many-flowered; flowers purplish or purplish blue, rarely white. — Var. GRACILIS (L. gracilis, *Nutt.*) is a more slender and hairy form, with smaller and narrower, often acute leaflets. — Dry sandy soil. April - May. ♃ — Stem 1° - 1½° high.

2. **L. villosus,** Willd. — Biennial, villous and hoary; stems thick, prostrate or ascending; leaves simple, lanceolate oblong, mostly acute, long-petioled; stipules linear-subulate, elongated, adnate below to the petioles; racemes erect, densely many-flowered; flowers pale red, the vexillum dark purple in the centre; legume very woolly. — Dry sandy barrens in the lower districts. April. — Stems 1° - 2° long. Leaves (with the petiole) 6′ - 8′ long.

3. **L. diffusus,** Nutt. Perennial; silky-tomentose and hoary; stems prostrate or erect, much branched; leaves simple, oblong or obovate, obtuse, short-petioled; stipules short, often wanting on the branches; racemes many-flowered; flowers blue, the vexillum dark purple in the centre; legume woolly. — With the preceding. April - May. — Stems 1° - 2° high. Leaves 2′ - 4′ long.

3. MEDICAGO, L.

Calyx 5-cleft; the lobes subulate or setaceous. Corolla deciduous. Vexillum longer than the partly united wings and keel. Stamens 10, diadelphous (9 & 1), equal. Style smooth. Legume falcate or coiled, 1 - many-seeded. — Herbs or shrubs. Leaves trifoliolate. Stipules adnate to the petioles, mostly incised. Flowers yellow, in axillary spikes.

1. **M. lupulina,** L. Pubescent; stem procumbent; leaflets obovate, toothed; stipules nearly entire; spikes globose, many-flowered; flowers minute; legumes reniform, 1-seeded, black. — Waste places. Introduced. ① — Stem 1° - 2° long.

2. **M. denticulata,** Willd. Stems prostrate; leaflets obovate or obcordate, denticulate; stipules ciliate-toothed; spikes 2–5-flowered, the flowers purplish; legume flat, coiled, the thin margin fringed with a double row of curved hooked bristles. — Waste ground. Introduced.

3. **M. maculata,** Willd. Like the preceding, but the leaflets mostly purplish in the centre, the stipules more strongly toothed, and the margins of the legume thicker. — New Orleans. Introduced.

4. MELILOTUS, Tourn. MELILOT, SWEET CLOVER.

Calyx 5-toothed; the teeth long and equal. Corolla deciduous. Wings and keel cohering. Stamens diadelphous (9 & 1). Legume ovoid, coriaceous, veiny or rugose, longer than the calyx, 1–4-seeded, scarcely dehiscent. — Smooth herbs. Leaves trifoliolate. Leaflets often toothed. Stipules adnate to the petioles. Flowers yellow or white, in axillary racemes.

1. **M. officinalis,** Willd. Stem erect, branching; leaflets obovate-oblong, toothed; flowers yellow; vexillum striped with brown, as long as the keel and wings; legume obovate, rugose. — Cultivated ground. Introduced. ① and ② — Stems 1°–3° high. Legumes drooping, 2-seeded.

2. **M. alba,** Lam. Stem erect, branching; leaflets oblong, truncate, serrate; racemes elongated; flowers white; vexillum longer than the wings and keel; legumes ovate, rugose, 1-seeded. — Cultivated grounds. Introduced. ① — Legumes drooping.

3. **M. parviflora,** Desf. Annual; stems ascending; leaflets of the lower leaves roundish entire, of the upper oblong, denticulate; flowers very small, densely spiked, yellow; legume ovate, rugose, 1-seeded. — Waste ground. Introduced.

5. TRIFOLIUM, L. CLOVER.

Calyx 5-cleft; the teeth subulate or setaceous. Corolla withering or persistent; the keel shorter than the wings, and united with them by their claws. Stamens diadelphous (9 & 1). Legume smooth, membranaceous, 1–6-seeded, often shorter than the calyx, scarcely dehiscent. — Tufted or diffuse herbs. Leaves trifoliolate, the leaflets mostly toothed. Stipules adnate to the petioles. Flowers (in our species) capitate.

* *Fruiting calyx erect.*

1. **T. pratense,** L. (RED CLOVER.) Hairy; stems erect; leaflets oblong-ovate or oval, often emarginate, slightly serrulate; heads large, ovate; calyx teeth setaceous, hairy; flowers purple. — Around dwellings. Extensively cultivated, but scarcely naturalized, at least in the low country. — Stems 1°–2° high. Leaves usually marked with a pale 3-angled spot above.

2. **T. arvense,** L. (RABBIT-FOOT CLOVER.) Softly pubescent; stems erect; leaflets linear-oblong, minutely 3-toothed; heads oblong; calyx teeth setaceous, plumose; corolla white, with a purple spot on the wings. — Old fields, chiefly in the upper districts. Introduced. ① — Stems 8′–12′ high.

* * *Fruiting calyx reflexed.*

3. **T. reflexum,** L.* (Buffalo Clover.) Pubescent; stems ascending; leaflets roundish or obcordate, toothed, the uppermost oblong; heads globose; calyx tube very short, the subulate teeth long and hairy; vexillum broadly ovate, purple; the wings and keel white; legume 3 – 5-seeded. — Waste places and pastures. April – May. ① and ② — Stems 6′ – 12′ long. Heads large.

4. **T. stoloniferum,** Muhl. Very near the preceding, but smooth throughout; stems creeping; leaflets broadly obcordate; heads more loosely flowered; legumes 2 – 3-seeded. — Open woods and pastures, Tennessee. May – June.

5. **T. repens,** L. (White Clover.) Smooth; stems creeping; leaflets roundish or obcordate; heads globose, long-peduncled; calyx teeth short; flowers white; legume 4-seeded. — Pastures and around dwellings. Introduced. May. ♃ — Stems 6′ – 12′ long.

6. **T. procumbens,** L. Pubescent; stems slender, erect or procumbent; leaflets small, thin, obovate or obcordate, toothed, the middle one stalked; heads small, ovate; flowers yellow; legume 1-seeded. — Waste places; more common in the upper districts. Introduced. ① — Stems 6′ – 12′ long.

7. **T. Carolinianum,** Michx. Pubescent; stems tufted, prostrate; leaflets small, obcordate, slightly toothed; heads roundish, long-peduncled; flowers white, tinged with purple; vexillum acute; legume 4-seeded. — Fields and pastures. March – April. ♃ — Stems 6′ – 10′ long, in shady places erect.

6. HOSACKIA, Dougl.

Calyx 5-cleft. Vexillum as long as the keel and spreading wings. Stamens diadelphous (9 & 1). Legume cylindrical or compressed, smooth, wingless, many-seeded. — Herbs. Leaves trifoliolate or pinnate. Stipules mostly minute and gland-like. Peduncles 1 – several-flowered.

1. **H. Purshiana,** Benth. Hairy; stem much branched; leaves trifoliolate, with oblong leaflets; peduncle 1-flowered, longer than the leaves; keel acute; bracts simple; legume linear, nearly terete. — North Carolina. — Stem 12′ – 15′ high. Flowers rose-color.

7. PSORALEA, L.

Calyx campanulate, 5-cleft, with the lobes acute. Stamens diadelphous or partly monadelphous: half of the anthers often imperfect. Legume often wrinkled, 1-seeded, indehiscent, included in the calyx. — Perennial usually glandular herbs. Stipules cohering with the petioles. Flowers axillary or terminal, purplish or white, racemose or spiked.

* *Leaves* 1 – 3-*foliolate.*

1. **P. virgata,** Nutt. Smoothish; stem virgate, sparingly branched; leaves very remote, 1- (or the lowest 2 – 3-) foliolate; leaflets linear or oblong-linear, obtuse, the lower ones broader and long-petioled; stipules setaceous; peduncles much shorter than the leaves; spikes dense, cylindrical; bracts

ovate, acuminate, and, like the calyx, glandular and hairy; corolla violet. — Near St. Mary's, Georgia, and the adjacent parts of Florida. July. — Stem 2° high. Leaflets 2′ – 5′ long.

2. **P. melilotoides,** Michx. Glandular and sparingly pubescent; leaves trifoliolate; leaflets oblong lanceolate or elliptical; stipules subulate; spikes oblong, on peduncles 2 – 3 times as long as the leaves; bracts ovate, acuminate, veiny; corolla violet; legume rugose. — Var. (P. eglandulosa, *Ell.*) Glandless or nearly so; bracts ovate-lanceolate, and, like the calyx, villous. — Dry soil, Florida to Tennessee, and westward. May – June. — Stem 1° – 2° high. Leaflets 1′ – 2′ long.

3. **P. Onobrychis,** Nutt. Pubescent; leaves trifoliolate; leaflets ovate, acuminate; racemes elongated, somewhat secund; calyx glandular, the teeth small, obtuse, equal; legume ovate, muricate, wrinkled transversely. — Near Spartanburg, South Carolina. June – July. — Stem 3° – 5° high. Leaves very large.

4. **P. canescens,** Michx. Hoary-pubescent; lower leaves trifoliolate, the upper simple, short-petioled; leaflets obovate, glandular; racemes longer than the leaves, few-flowered; calyx inflated; flowers blue, turning greenish; legume even. — Dry pine barrens, Florida to North Carolina. April – May. — Stem bushy, 2° high. Resembles a Baptisia.

* * *Leaves palmately* 5 – 7-*foliolate.*

5. **P. Lupinellus,** Michx. Smooth; stem slender, declining, sparingly branched; leaflets filiform; racemes longer than the leaves, loose-flowered; flowers violet; legumes rugose. — Dry pine barrens, Florida to North Carolina. May – June. — Stem 2° long. Leaflets 2′ – 3′ long.

6. **P. subacaulis,** Torr. & Gray. Nearly stemless; white with spreading hairs; leaflets obovate-oblong; peduncles longer than the leaves, rigid; spikes dense, ovate or oblong. — Rocky hills near Nashville, Tennessee. April – May. — Leaflets 1′ long. Peduncles 4′ – 6′ long. Flowers purple.

* * * *Leaves pinnate.*

7. **P. multijuga,** Ell. Stem branching; leaflets numerous (9 – 10 pairs), oblong-lanceolate, obtuse, pubescent; spikes oblong; bracts small, membranaceous, without glands. — Abbeville District, South Carolina. — Stem 1° – 2° high. Leaflets small. Bracts half as long as the calyx. Flowers violet.

8. PETALOSTEMON, Michx.

Calyx nearly equally 5-toothed or 5-cleft. Petals almost regular, on filiform claws, four of them united with the tube of stamens, the fifth free, cordate or oblong, folded. Stamens 5, united into a cleft tube. Ovary 2-ovuled. Legume indehiscent, 1-seeded, included in the calyx. — Perennial glandular herbs, with unequally pinnate leaves, and white or purple flowers in terminal spikes or heads.

§ 1. *Lower bracts involucrate, empty: calyx teeth setaceous, plumose: heads globular, corymbed.*

1. **P. corymbosus,** Michx. Glandular; stems erect, clustered, very leafy; leaflets 5 – 15, cuneate-oblong, obtuse, 3″ – 4″ long; bracts 9 or more,

roundish, ciliate; calyx villous; petals white, obtuse; style and ovary bearded. — Dry pine barrens in the middle and lower districts. — Sept. - Oct. — Stem 2° high.

Var. **trifoliatus.** Glandless, or nearly so; leaflets mostly 3, filiform; bracts 3 - 4, broadly ovate, acute; style bearded below the middle; petals acute. — With the preceding.

§ 2. *Lower bracts not involucrate, nor empty: calyx teeth shorter than the tube: spikes single, terminal.*

* *Petals white or flesh-colored.*

2. **P. gracilis,** Nutt. Stems decumbent, virgate; leaflets 5 - 7, oblong-linear, obtuse; spikes oval, becoming cylindrical in fruit, peduncled; vexillum obovate. — Low pine barrens, Florida, and westward. August. — Stems 2° long. Leaflets ½′ long.

3. **P. carneus,** Michx. Stems erect, much branched, very leafy; leaflets 5 - 7, linear, acute; spikes oblong, long-peduncled; calyx as long as the subulate bracts; vexillum oblong. — Dry sandy soil, Florida and Georgia, westward. — Stems 2° - 3° high. Flowers white or reddish.

4. **P. candidus,** Michx. Stem rigidly erect; leaflets 5 - 9, lanceolate, obtuse; spikes cylindrical in fruit; calyx sulcate, half as long as the setaceous-pointed bracts, the teeth acute; vexillum "broadly cordate." — West Tennessee, and westward. August - Sept.

5. **P. multiflorus,** Nutt.? Glabrous; stem corymbose-branched; leaflets 3 - 5, filiform; heads numerous, globose; calyx smooth, longer than the subulate bracts, the short teeth obtuse; legume partly exserted. — St. Petersburg, Florida (*C. L. Brownell*). — Stem 2° high. Leaflets 3″ - 4″ long. Heads 3″ wide.

* * *Petals purple or rose-color.*

6. **P. violaceus,** Michx. Stem erect, corymbose above, very leafy; leaflets 3 - 5, narrow-linear; spikes oblong or cylindrical; calyx silky, the short teeth obtuse, as long as the lanceolate acuminate silky bracts. — West Tennessee, and westward. — Stem 2° high. Flowers violet-purple.

7. **P. roseus,** Nutt. Leaflets narrower; calyx smooth, the teeth as long as the tube, shorter than the setaceous bracts; petals obovate, rose-color; otherwise like the preceding. — Low pine barrens, East Florida.

8. **P. foliosus,** Gray. Smooth, very leafy; leaflets 16 - 29, linear-oblong, mucronate, the glands few and small; spikes cylindrical, short-peduncled; bracts slender-awned from a lanceolate base, exceeding the rose-purple flowers; calyx glabrous, the teeth about half the length of the cylindraceous tube (*Gray*). — Near Nashville, Tennessee.

9. **P. decumbens,** Nutt. Stems decumbent, branching from the base; leaflets 6 or 8, linear-oblong, mucronate; spikes ovate-oblong; calyx shorter than the acuminate bracts, the teeth longer than the smooth tube; petals deep violet-purple, linear-oblong, obtuse at the base, vexillum cordate. — Northern Alabama, Tennessee, and westward. — Stems 1° long. Leaflets 6″ - 8″ long.

10. **P. Feayi,** Chapm. Smooth; stems several, decumbent, much branched; leaves long-petioled, the 4 – 8 leaflets soon involute-filiform, obtuse or truncate; heads globular, corymbose, long-peduncled; calyx tube smooth, twice the length of the ovate acute pubescent teeth, and smooth bracts; petals bright rose-color; stamens long-exserted. — Bartow, South Florida (*Feay*). — Stems 1° – 1½° long. Leaflets 5″ – 8″ long. Heads 3″ – 4″ broad.

9. DALEA, L.

Calyx 5-cleft. Corolla imperfectly papilionaceous; petals clawed; four of them united with the tube of stamens below the middle, the fifth (vexillum) free, cordate, and inserted into the bottom of the calyx. Stamens 10, united into a cleft tube. Legume 1-seeded, membranaceous, indehiscent, included in the calyx. — Mostly glandular herbs, with spiked or capitate flowers.

1. **D. alopecuroides,** Willd. Stem erect, smooth; leaves pinnate, with numerous linear-oblong leaflets; spikes dense, cylindrical, silky-villous; corolla small, pale violet, the vexillum white. — Rich soil, Alabama, and westward. July. — Stem 1° – 2° high.

2. **D. Domingensis,** DC. Erect, velvety-pubescent; leaflets 12 or 14, obovate; spikes capitate, short-peduncled; calyx villous, the lobes subulate. — Key Biscayne, South Florida (*Curtiss*).

10. AMORPHA, L.

Calyx obconical, 5-toothed, persistent. Vexillum straight, concave. Wings and keel none. Stamens monadelphous at the base, exserted. Legume 1 – 2-seeded, oblong, curved, glandular, indehiscent or nearly so. — Shrubs, with unequally pinnate leaves, the numerous leaflets punctate with pellucid dots. Flowers blue or white, in slender terminal and axillary racemes or spikes.

1. **A. fruticosa,** L. Stem 5° – 10° high, arborescent, pubescent or glabrous; leaflets 5 – 10 pairs, ¾′ – 1½′ long, elliptical or oblong, obtuse or emarginate, the lowest commonly distant from the stem; racemes mostly 1 – 3, 4′ – 6′ long; calyx teeth short, obtuse, or the 2 upper obtuse, the 3 lower or the middle one acute; vexillum deep blue; legume mostly 1-seeded. — Mostly in low ground and river banks. May – July. Very variable.

2. **A. herbacea,** Walt. Stem lower (2° – 4° high); leaflets 10 – 20 pairs, oval or oblong, 6″ – 9″ long, the lowest near the stem; racemes spicate, 6′ – 12′ long, often panicled; calyx teeth more or less villous; vexillum blue or white; legume 1-seeded. — Low sandy pine barrens, in the lower districts. June – July.

3. **A. canescens,** Nutt. Hoary-tomentose; leaves sessile; leaflets numerous, small, elliptical, crowded; spikes short, panicled, dense-flowered; calyx teeth acute, nearly equal; legume 1-seeded. — Near Augusta, Georgia, and westward. July – August. — Shrub 1° – 2° high. Flowers bright blue.

11. ROBINIA, L. LOCUST.

Calyx short, 5-toothed or 5-cleft, the two upper teeth shorter and more or less united. Vexillum large, roundish; keel obtuse. Stamens diadelphous

(9 & 1). Style bearded on the side facing the vexillum. Legume compressed, many-seeded, the seed-bearing suture margined. Seeds flat. — Trees or shrubs, often with stipular spines, unequally pinnate leaves, and showy white or rose-colored flowers in axillary racemes.

1. **R. Pseudacacia,** L. (LOCUST, FALSE ACACIA.) Smoothish; spines small on the older branches, straight; leaflets 9 – 17, oblong-ovate or elliptical; racemes pendulous, oblong, many-flowered; flowers white; legume 4 – 6-seeded. — Rich soil, in the upper districts. April – May. — A tree 30° – 60° high, with hard and durable wood. Racemes 3′ – 5′ long. Calyx spotted Legume smooth. Flowers fragrant.

2. **R. viscosa,** Vent. Branches, petioles, peduncles, and legumes glandular-viscid; spines very small; leaflets 11 – 25, ovate and oblong, obtuse or slightly cordate at the base, paler and pubescent beneath, tipped with a short bristle; flowers crowded in roundish erect racemes, rose-color; legume 3 – 5-seeded. — Banks of streams, on the mountains of Georgia and Carolina. May – June. — A tree 20° – 40° high. Flowers inodorous.

3. **R. hispida,** L. Branches, etc. more or less bristly; stipules very slender and bristle-like, deciduous; leaflets 11 – 18, smooth, ovate or oblong-ovate, rounded or slightly cordate at the base, tipped with a long bristle; flowers large, in a loose and mostly pendulous raceme, bright rose-color. — Mountains of Georgia and North Carolina, both the ordinary form, and the var. ROSEA (*Pursh*), with pubescent branches and few-flowered racemes. May. — Shrub 3° – 8° high.

Var. **Elliottii.** Branches, etc. pubescent; stipular spines very stout, spreading or recurved. (R. hispida, var. rosea, *Ell.*) — Pine barrens in the central parts of Georgia, and southward. — Shrub 3° – 5° high, with thick and rigid branches. A still smaller form, scarcely a foot high (var. nana, *Ell.*), is found at Columbia, South Carolina.

12. WISTARIA, Nutt.

Calyx campanulate, somewhat 2-lipped; the upper lip broad, 2-cleft, the lower 3-cleft. Vexillum large, with 2 parallel ridges at the base. Stamens diadelphous (9 & 1). Legume coriaceous, nearly terete, contracted between the seeds, at length 2-valved. — Twining shrubs, with unequally pinnate leaves, and showy purple flowers, in a crowded raceme.

1. **W. frutescens,** DC. Young leaves and branches silky-pubescent; leaflets 9 – 13, ovate-lanceolate or oblong; stipels none; racemes on short branches, dense-flowered. — Margins of swamps in the lower districts. April – May. — Leaflets 1′ long. Racemes 4′ – 6′ long, 2′ – 3′ in diameter. Legume 1 – several-seeded. Bracts large, caducous.

13. TEPHROSIA, Pers.

Calyx nearly equally 5-cleft or 5-toothed. Vexillum large, roundish, spreading or reflexed, usually white within, and reddish or purple and silky without; keel obtuse, cohering with the wings. Stamens monadelphous or diadelphous. Style smooth or laterally bearded. Legume compressed, linear, many-seeded. — Perennial herbs, with unequally pinnate leaves, with the leaflets opposite mucronate and straight-veined, and white flowers, turning purplish.

* *Flowers single or by pairs in the axils of the leaves; the uppermost often crowded in a dense raceme.*

1. **T. Virginiana,** Pers. (GOAT'S RUE.) Soft-hairy and somewhat hoary or smoothish; stems very leafy, clustered, erect, simple; leaflets 11 25, oblong or linear-oblong, acute or obtuse, smoothish above; flowers yellowish white tinged with purple. — Dry soil. June – July. — Stems 1° – 2° high, from long and slender roots. Flowers showy.

* * *Flowers in long-peduncled racemes opposite the leaves: vexillum pubescent externally.*

2. **T. spicata,** Torr. & Gray. Hirsute or villous with rusty hairs; stems simple or diffusely branched; leaves scattered, short-petioled; leaflets 9 – 15, oval or cuneate-oblong, rounded and strongly mucronate at the apex, smoothish above; racemes 2 – 3 times as long as the leaves, 6 – 10-flowered; lobes of the calyx linear-subulate; flowers large. Varies with linear, acute, and reflexed leaflets, the odd one elongated. — Dry soil, Florida to North Carolina, and westward. June – July. — Stems 1° – 2° long.

3. **T. hispidula,** Pursh. Hirsute; stems slender, terete, erect or procumbent; petiole shorter than the lowest leaflets; leaflets 11 – 15 (4″ – 8″ long), oblong, acute or obtuse; peduncles slender, terete, commonly longer than the leaves, 2 – 4-flowered. — Dry sandy soil, Florida to North Carolina, and westward. June – July. — Stems 6′ – 18′ long. Legume slightly hispid.

4. **T. chrysophylla,** Pursh. Prostrate, rusty-pubescent; stems diffusely branched; leaves sessile or nearly so, short (1′ – $1\frac{3}{4}$′ long); leaflets (yellowish) 5 – 7, cuneate-obovate, obtuse or emarginate, smooth above; peduncles longer than the leaves, terete, 2 – 3-flowered; calyx teeth short, acute. — Varies with smaller ($\frac{1}{2}$′ – 1′ long) leaves and flowers, the latter mostly solitary on the short peduncles. — Dry pine barrens, Florida, Georgia, and westward. — Stems 6′ – 18′ long.

5. **T. ambigua,** M. A. Curtis. Hoary-pubescent, or nearly smooth; stems decumbent, angled; leaves scattered, long-petioled (5′ – 6′ long); leaflets 7 – 15, distant, wedge-oblong, truncate or emarginate at the apex, paler and often smooth above, purplish and strongly veined beneath; peduncles flattened, equalling or exceeding the leaves, few-flowered; calyx teeth short, acute. — Dry sandy soil, Florida to North Carolina. June – July.

6. **T. onobrychoides,** Nutt. Softly pubescent; stem erect, mostly simple; leaves petioled; leaflets numerous, narrowly oblong, truncate or emarginate at the apex, mucronate, soon smooth above; racemes very long, erect, many-flowered; legume nearly straight. — Pine barrens near Mobile (*Mohr*), and westward. — Stem 2° high. Leaflets 1′ long. Racemes 1° – 2° long.

7. **T. leptostachya,** DC. Stem erect, branching, slightly pubescent; leaflets 12 – 14, wedge-oblong, when young silky beneath; stipules subulate;

racemes long and slender; flowers distant; legume erect. — Sandhills at Cape Canaveral (*Curtiss*). July. — Stem 1° – 2° high.

8. **T. angustissima,** Shuttl. Smooth or nearly so throughout; stems slender, prostrate, diffusely branched; leaves short-petioled; leaflets 10 – 15, linear, acute, mostly opposite; racemes very slender, longer than the leaves, bearing 2 – 4 small scattered flowers; calyx slightly pubescent, with triangular-ovate acute teeth. — South Florida (*Rugel*). — Stem 1° long. Leaflets 8″ – 12″ long, 1″ wide, spreading. Corolla about 3″ long.

14. INDIGOFERA, L. Indigo.

Calyx 5-cleft. Vexillum roundish. Keel with a subulate spur on each side, often elastically reflexed. Stamens diadelphous (9 & 1). Legume 1 – many-seeded. Seeds usually truncated at each end, often separated by membranaceous partitions. — Herbs with unequally pinnate leaves, and white, brownish, or purplish axillary flowers. Legumes drooping.

* *Racemes longer than the leaves. — Indigenous species.*

1. **I. Caroliniana,** Walt. Smoothish; stem erect, tall, branching; leaflets 10 – 15, obovate or oblong; racemes many-flowered; calyx teeth short, acute; flowers yellowish brown; legume oblong, veiny, 2-seeded. — Dry pine barrens, Florida to North Carolina. July – August. ♃ — Stem 3° – 5° high. Flowers small. Legume 4″ – 5″ long.

2. **I. leptosepala,** Nutt. Rough hairy; stem decumbent; leaflets 7 – 9, obovate-oblong or cuneate; racemes 6 – 15-flowered; calyx teeth slender-subulate; flowers pale scarlet; legume linear, even, 6 – 9-seeded. — Georgia, and westward. — Stem 2° – 3° long. Legume 1½′ long, straight, 4-angled.

3. **I. subulata,** Vahl. Somewhat shrubby, sparsely pubescent with appressed hairs; stem filiform, decumbent; leaves distant; leaflets 5, oblong, mucronate; racemes loosely many-flowered, in fruit many times longer than the leaves; calyx teeth subulate; legume filiform, reflexed, nearly terete, 6 – 8-seeded. — South Florida. — Stem 2′ – 3′ long. Legume 2′ – 3′ long.

* * *Racemes shorter than the leaves. — Introduced species.*

4. **I. tinctoria,** L. Stem erect; leaflets 9 – 11, oval, pubescent beneath; legume terete, torulose, curved. — Waste places. August.

5. **I. Anil,** L. Stem erect; leaflets 7 – 15, oval; legume compressed, even, thickened at each suture. — Waste places.

These two species were formerly cultivated in some of the States, and employed in the manufacture of Indigo.

15. SESBANIA, Pers.

Calyx bibracteolate, campanulate, truncate, 5-toothed. Petals clawed. Vexillum round or reniform; wings straight, as long as the curved obtuse keel. Stamens diadelphous (9 & 1). Style smooth; stigma truncate. Legume continuous, contracted between the seeds, 2 – many-seeded, the seeds separated by cross partitions. Cotyledons thick; radicle incumbent. — Leaves abruptly pinnate. Flowers in axillary racemes.

* *Inner wall of the legume separating from the outer one at maturity in the form of a membranous sack enclosing the seeds.*

1. **S. vesicaria,** Ell. Annual, 2° – 10° high, glabrous; leaflets numerous, 1′ long, linear-oblong, mucronate; racemes shorter than the leaves, simple or compound; flowers small, yellow; legume oblong, 1½′ long, 2-seeded. (Glottidium, *Desv.*) — Damp ground near the coast. August.

* * *Inner and outer walls united: suture thick or winged.*

2. **S. macrocarpa,** Muhl. Annual, 3° – 10° high, glabrous; leaflets very numerous, ½′ – 1′ long, oblong-linear, obtuse; racemes short, 1 – 4-flowered; flowers yellow, dotted, the vexillum orbicular; legume 6′ – 10′ long, linear, compressed – 4-angled, many-seeded. — Marshes along the coast. August – Sept.

3. **S. punicea,** Benth. Frutescent, 2° – 5° high; leaflets 10 – 20, linear-oblong; racemes few-flowered; flowers large, scarlet; legume oblong, 4-winged, few-seeded. — Low ground. Sparingly introduced.

16. ASTRAGALUS, L. MILK-VETCH.

Calyx 5-toothed; the 2 upper teeth separated. Vexillum as long as the wings and obtuse keel. Stamens 10, diadelphous. Legume commonly turgid, few – many-seeded, usually partly or completely 2-celled by the introversion of one or both of the sutures. — Herbs with unequally pinnate leaves, and axillary spiked or racemose flowers.

* *Legume partly or completely 2-celled by the introversion of the dorsal suture.*

1. **A. Canadensis,** L. Tall, pubescent, leaflets 21 – 31, oblong, obtuse; stipules ovate, clasping; peduncles as long as the leaves, closely many-flowered; calyx teeth subulate; legume inflated, oval, terete. — Mountains of Georgia and North Carolina. June – August. ♃ — Stem 2° – 3° high. Leaflets 1′ – 1½′ long. Flowers ¾′ long, pale yellow.

2. **A. glaber,** Michx. Stem tall, nearly smooth; leaflets 15 – 25, oblong-linear, pubescent beneath; stipules minute, spreading; spikes longer than the leaves, loosely many-flowered; calyx teeth broad and short; legume curved, oblong, flattened edgewise. — Dry pine barrens in the middle districts. April. ♃ — Stem 2° high. Leaflets 6″ – 8″ long. Flowers white.

3. **A. obcordatus,** Ell. Smoothish; stems prostrate; leaflets small, 17 – 25, obcordate; peduncles as long as the leaves, loosely 8 – 15-flowered; legumes crescent-shaped, compressed, veiny. — Dry sandy barrens in the lower districts. April – June. ♃ — Stems 6′ – 12′ long. Leaflets 3″ – 4″ long. Flowers pale purple.

4. **A. caryocarpus,** Ker. Stems prostrate or ascending, appressed-pubescent; leaflets 16 – 24, oblong; stipules ovate; peduncles as long as the leaves; racemes rather loosely flowered; the flowers violet-purple; legume ovate, acute, smooth, thick and succulent, corky when dry. — Near Nashville, Tennessee (*Dr. Gattinger*), and westward.

5. **A. Plattensis,** Nutt., var. **Tennesseensis,** Gray. Villous, canescent; stems prostrate or ascending; leaflets about 20, oblong or linear-

oblong, obtuse or emarginate; stipules ovate-lanceolate; peduncles as long as the leaves; racemes short, 10 – 15-flowered; calyx teeth subulate; legume oblong, curved, thick and fleshy, many-seeded. — North Alabama and Tennessee. March – April. ♃ — Stems 4′ – 6′ long. Flowers 8″ – 9″ long, apparently purple.

* * *Legume 1-celled: the ventral suture thickened and sometimes slightly inflexed.*

6. **A. villosus,** Michx. Villous and hoary; stems prostrate; leaflets about 13, oval or oblong, commonly emarginate; stipules lanceolate; peduncles as long as the leaves; racemes ovate, dense-flowered; calyx teeth longer than the tube; legume oblong, curved, 3-angled, 1-celled. — Dry pine barrens, Florida to South Carolina. April – May. ♃ — Stems 4′ – 6′ long. Flowers small, dull yellow.

17. VICIA, Tourn. VETCH, TARE.

Calyx tubular, 5-cleft, the two upper teeth usually shorter. Style filiform, hairy at the apex, or on the side facing the keel. Legume 2 – many-seeded, 2-valved. Seeds orbicular. Cotyledons thick. — Slender climbing herbs. Leaves pinnate; the petiole terminating in a tendril. Stipules mostly semi-sagittate. Flowers axillary.

* *Peduncles shorter than the leaves, 1 – 2-flowered.*

1. **V. sativa,** L. (VETCH or TARE.) Pubescent; stem simple; leaflets 10 – 12, varying from obovate-oblong to linear, emarginate; flowers by pairs, nearly sessile, pale purple; legume linear, several-seeded. — Cultivated grounds. Introduced. ① — Corolla ½′ long. Stem 1° – 2° long.

2. **V. micrantha,** Nutt. Smooth; leaflets 4 – 6, linear, obtuse or barely acute; peduncles 1 – 2-flowered; flowers minute, pale blue; legume sabre-shaped, 4 – 10-seeded. — Banks of rivers and shaded places, Florida to North Alabama, and westward. April. ① — Stems 2° – 3° long. Seeds black.

* * *Peduncles commonly longer than the leaves, 3 – many-flowered.*

3. **V. hirsuta,** Koch. Hairy; leaflets 12 – 14, oblong-linear, truncate; peduncles 3 – 6-flowered, about as long as the leaves; calyx teeth equal; flowers small, bluish white; legume short, oblong, 2-seeded. – Cultivated ground. Introduced. April – May.

4. **V. acutifolia,** Ell. Smooth; leaflets about 4, linear or rarely oblong, acute or truncate; peduncles 4 – 8-flowered, usually longer than the leaves; flowers pale blue, the keel tipped with purple; legume linear, 4 – 8-seeded. — Damp soil near the coast. March – May. ♃ — Stems angled, 2° – 4° long, branching.

5. **V. Caroliniana,** Walt. Smoothish; leaflets 8 – 12, linear or linear-oblong, obtuse or barely acute; stipules small, subulate; peduncles many-flowered; calyx teeth shorter than the tube; flowers nearly white, the keel tipped with blue; legume oblong, several-seeded. — Dry open woods, chiefly in the upper districts. April – May. ♃ — Stems 3° – 4° long, branching. Flowers 4″ – 6″ long.

6. **V. Ludoviciana,** Nutt. Smoothish; leaflets 10 – 15, elliptical, rounded or emarginate at the tip; peduncles 2 – 4-flowered, flowers small, pale blue;

calyx hairy; legume broadly sabre-shaped, 5-6-seeded. — New Orleans. — Stem stout, 2° - 3° long. Leaflets 6″ - 8″ long. Peduncles in fruit longer than the leaves.

7. **V. Floridana,** Watson. Leaflets oblong or obovate, mucronate, thin (½′ long); flowers smaller; legume short (½′ long), nearly oval, pointed, 2-4-seeded; otherwise like No. 4. — Low hummocks, East Florida.

18. LATHYRUS, L.

Style flattened, bearded on the side facing the vexillum. Otherwise as in Vicia.

1. **L. pusillus,** Ell. Annual; leaflets 2, linear-lanceolate, acute; stipules sagittate; peduncles elongated, 1-2-flowered; teeth of the calyx subulate-setaceous, nearly equal; legume long, 10-15-seeded. — Near Charleston, South Carolina, and westward. May. — A small and slender vine. Flowers purple.

2. **L. venosus,** Muhl. Perennial; stem stout; leaflets 10-14, oblong-ovate, obtuse; stipules lanceolate; peduncles 10-20-flowered; flowers large, purple; calyx teeth very unequal. — Shady banks in the upper districts. June - July. — Stem angled, 2° - 3° long. Leaflets 2′ - 3′ long. Flowers ¾′ long.

3. **L. myrtifolius,** Muhl. Perennial; stem slender, 4-angled; leaflets 4-6, oblong, obtuse; stipules large, ovate, entire; peduncles 3-6-flowered; flowers pale purple; calyx teeth unequal. — Banks of rivers, North Carolina, and northward. July - August. — Stem 2° - 4° long, often wing-angled. Leaflets 1½′ long.

19. ÆSCHYNOMENE, L.

Calyx 2-lipped, 5-cleft or 5-toothed. Petals equal: vexillum roundish. Stamens diadelphous (5 & 5). Legume compressed, stipitate, separating transversely into 3 or more 1-seeded indehiscent joints. — Herbs or shrubs, with pinnate leaves, and axillary yellow flowers.

1. **Æ. hispida,** Willd. Annual; stem erect, muricate-hispid; leaflets numerous, oblong-linear; peduncles 3-5-flowered; legume straight, linear, even along the upper suture, wavy on the lower, 6-10-jointed, the joints nearly square, hispid. — Swamps and ditches. August. — Stem 2° - 4° high.

2 **Æ. viscidula,** Michx. Perennial; stem slender, prostrate, viscid-pubescent; leaves small; leaflets 7-9, obovate, reticulate-veined; peduncles 3-4-flowered, the pedicels long and spreading; stipules and bracts ovate; legume 2-3-jointed, the joints half-orbicular, hispid. — Sandy places along the coast, Florida and Georgia. August - Sept. — Stem 1° - 2° long. Leaves 1′ long. Flowers small.

20. ZORNIA, Gmel.

Calyx 2-lipped, the upper lip emarginate, the lower 3-cleft. Corolla inserted on the base of the calyx. Stamens monadelphous, alternately shorter; anthers alternately oblong and globose. Legume compressed, with 2 – 5 roundish hispid joints. — Herbs. Leaves palmately 2 – 4-foliolate. Stipules sagittate. Flowers yellow, in axillary large-bracted racemes.

1. **Z. tetraphylla,** Michx. Perennial, smooth or downy; leaflets 4, lanceolate or oblong-obovate; racemes 3 - 9-flowered, much longer than the leaves; the flowers distant and almost concealed by the large ovate bracts; legume hispid, 3 – 4-jointed. — Dry sandy soil, Florida to North Carolina, and westward. June – August. — Stem 2° long, prostrate.

21. STYLOSANTHES, Swartz.

Flowers of two kinds: one perfect, but sterile; the other destitute of calyx, corolla, and stamens, and fertile. Calyx 2-bracted, 2-lipped, 5-cleft; the tube long and slender. Corolla inserted on the throat of the calyx. Keel entire at the apex. Stamens monadelphous, with the alternate anthers linear and ovate. Style of the fertile flower hooked. Legume veiny, 1 – 2-jointed, the lower joint empty. — Low herbs. Leaves trifoliolate. Stipules united with the petioles. Flowers in a short and dense terminal spike.

1. **S. elatior,** Swartz. Perennial; stem mostly erect, 6′ – 12′ high, pubescent in lines, or sometimes hispid; leaflets rigid, lanceolate, strongly veined; stipules sheathing; spike few-flowered; bracts bristly; flowers yellow; legume compressed. — Sandy pine barrens. June – August.

Var. **procumbens,** Pursh? Stems procumbent, 1° – 2° long; leaflets ovate-lanceolate, 3″ – 4″ long; legumes nearly globose, obscurely ribbed. — Sandy woods, West Florida.

22. CHAPMANIA, Torr. & Gray.

Flowers perfect, but sterile, and imperfect and fertile. *Sterile Flower.* Calyx turbinate, 5-cleft. Petals 5, the vexillum and wings nearly equal, broadly obovate, the keel straight, convolute, enclosing the stamens and pistil. Stamens 10, monadelphous below the middle, shorter than the abortive pistil. *Fertile Flower.* Petals and stamens none. Style short and curved. Legume 1 – 4-jointed, the joints 1-seeded. Seed suspended. — An erect perennial herb, from tuber-bearing roots. Stem mostly simple, 2° – 3° high, hirsute. Leaves unequally pinnate, with setaceous stipules; leaflets 5 – 7, oblong or obovate, ½′ – 1′ long. Flowers in short 2 – 3-flowered spikes, at the leafless summit of the stem. Calyx glandular-viscid. Petals fugacious, ¾′ long, yellow.

1. **C. Floridana,** Torr. & Gray. — Dry sandy pine barrens, South Florida. May – July. — Flowers expanding briefly in early morning.

23. LESPEDEZA, Michx. BUSH CLOVER.

Calyx 2-bracted, 5-cleft; the teeth subulate. Corolla inserted on the base of the calyx. Stamens diadelphous (9 & 1). Anthers alike. Legume small, lenticular, indehiscent, 1-seeded. — Perennial herbs (except No. 5), with trifoliolate leaves, and small flowers in axillary racemes or spikes.

* *Flowers of two kinds, viz. perfect, but mostly sterile, borne in spikes or racemes, and fertile, but destitute of corolla and stamens; the latter commonly in sessile clusters: corolla purple, longer than the calyx.*

1. **L. repens,** Torr. & Gray. Stem slender, prostrate; leaflets small, oval, mostly emarginate, the petiole very short, or as long as the lateral leaflets; racemes few-flowered, on filiform peduncles much longer than the leaves; legume roundish. (L. procumbens, *Michx.*) — Dry sandy soil, Florida to Mississippi, and northward. August. — Plant 1° - 2° long, smooth or tomentose.

2. **L. violacea,** Pers. Stem widely branched above, sparsely appressed-pubescent; the branchlets and peduncles setaceous; leaflets oval or oblong, glabrous above; peduncles diverging, few-flowered; flowers violet; legumes ovate, acute. — Dry sandy or rocky woods. August. — Stem 2° - 3° high. Leaves 1′ long.

3. **L. reticulata,** Pers. Stem mostly simple, very leafy; leaflets linear or oblong-linear, pubescent beneath; racemes very numerous, the lower shorter than the leaves, the upper glomerate; flowers purple; legume ovate, acute. With the preceding.

4. **L. Stuvei,** Nutt. Stem erect, branching, softly pubescent; leaflets oval or oblong, tomentose or silky on both surfaces, or only beneath, longer than the petiole; racemes axillary, mostly longer than the leaves; flowers nearly all perfect and fertile; legume longer than the calyx, ovate, villous. — Dry sterile soil. August.

* * *Flowers in axillary cluster-like racemes, the fertile with a partially developed corolla: calyx lobes ovate: stipules persistent: root annual.*

5. **L. striata,** Hook. & Arnott. Annual, erect or prostrate, appressed pubescent; leaflets oblong-obovate; stipules thin, strongly veined, twice as long as the petioles, persistent; racemes shorter than the leaves, 1 - 5-flowered; calyx veiny, the ovate teeth shorter than the round ovate reticulate legume; flowers purple. — Fields and waste ground. Introduced. — Stems 6′ - 12′ long.

* * * *Flowers all perfect and fertile: corolla as long as the calyx, yellowish white, the vexillum spotted with purple: legume included in the calyx.*

6. **L. hirta,** Ell. Stem erect, pubescent or villous; leaflets oval or roundish, longer than the petiole, pubescent beneath or on both sides; spikes dense, on peduncles longer than the leaves; calyx teeth linear lanceolate, as long as the ovate pubescent legume. — Dry barren soil. August. — Stem 2° - 4° high.

7. **L. capitata,** Michx. Stem mostly simple, villous; leaves nearly sessile; leaflets rather rigid, lanceolate or oblong, smooth above; racemes capitate; calyx lobes hairy, as long as the corolla, longer than the oblong-ovate legume. — Dry sterile soil in the upper districts. August. — Stem 2° - 4° high. Leaves 1′ - 2′ long.

Var. **sericea,** Hook. & Arn. Stem branching; leaflets oblong, silky-canescent on both sides; racemes crowded. — Low ground along the coast. August.

8. **L. angustifolia,** Ell. Stem slender, 2° – 3° high, closely pubescent; leaves short-petioled; leaflets linear or oblong-linear, obtuse or emarginate, pubescent beneath, 1′ or less long; racemes capitate, longer than the leaves; calyx nearly sessile; legume broadly ovate, downy, as long as the calyx. — Dry sandy soil in the lower districts. August.

24. DESMODIUM, DC. (HEDYSARUM, L., Ell.)

Flowers all similar and perfect. Calyx bilabiate; the upper lip emarginate or entire, the lower 3-cleft. Corolla inserted on the base of the calyx. Stamens diadelphous (9 & 1), or more or less monadelphous. Legume flattened, 2 – 6-jointed. — Chiefly perennial branching herbs. Leaves trifoliolate, petioled, stipulate; the leaflets petiolulate and stipellate. Flowers small, purple or whitish, in terminal racemes or panicles (except the last). Legumes hispid with hooked hairs.

§ 1. *Stamens monadelphous below: legumes conspicuously stipitate,* 2 – 4-*jointed, the joints half-obovate, concave on the back.*

1. **D. pauciflorum,** Nutt. Stem low, ascending, mostly simple, leafy; leaves scattered, long-petioled; leaflets thin, acute, ciliate, pale beneath, the lateral ones ovate, the terminal one rhombic-ovate; stipules minute; racemes terminal, 4 – 8-flowered, mostly shorter than the leaves. — Shady woods, Florida to Tennessee. August. — Stem 1° high. Leaflets 1′ – 2′ long. Corolla pale purple or white.

2. **D. acuminatum,** DC Stem pubescent, leafy at the summit; leaves large, long-petioled; leaflets smoothish, ovate or roundish, acuminate; raceme or panicle terminal, long-peduncled, many-flowered — Rich shady soil. July – August. — Plant 2° – 3° high. Leaflets thin, 2′ – 4′ long.

3. **D. nudiflorum,** DC. Stem smooth, short, leafy at the summit; panicle ascending from the base of the stem, naked, or with one or two leaves near the base, much longer than the stem; leaves long-petioled, smooth; leaflets ovate, acute or obtuse, white beneath; legume long-stipitate. — Rich woods. July – August. — Stem 6′ – 12′ high. Racemes simple or compound, on peduncles 2° – 3° high.

§ 2. *Stamens diadelphous: legume sessile or short-stipitate.*

∗ *Stipules large, ovate (except No.* 9), *acuminate, persistent: legume* 3 – 6-*jointed, the joints convex on the upper suture, rounded on the lower one.*

4. **D. canescens,** DC. Stem tall, rough-hairy, striate; leaflets ovate, mostly acute, very rough, especially beneath; panicle large, very hairy; bracts large, ovate, acuminate; joints of the legume 3 – 5, connected by a broad neck. — Dry open woods. July – August. — Plant 3° – 5° high, much branched, pale green. Leaflets 1½′ – 3′ long. Flowers large.

5. **D. tortuosum,** DC. Stem tall, much branched, softly pubescent; leaflets rhombic or elliptical, obtuse and often emarginate, tomentose beneath, rough above; racemes panicled, slender; flowers 2 – 3 together, on slender pedicels; legume nearly sessile, black; the small joints oval or rhombic, equally convex on both sutures. — Waste places. Introduced. Sept. — Stem 3° – 5° high. Leaflets 3′ – 4′ long. Legume 1′ long, pendulous. Flowers small

6. **D. cuspidatum,** Torr. & Gray. Stem smooth, erect; leaves smooth, ovate or lanceolate-ovate, acuminate; panicle mostly simple, elongated; flowers and bracts large; legume 4–6-jointed, the joints rhombic-oblong, connected by a broad neck. — Dry open woods. July–August. — Stem 3°–5° high. Leaflets 3′–5′ long. Legume 1½′–2′ long.

7. **D. viridiflorum,** Beck. Stem stout, tomentose, rough above; leaves large; leaflets ovate or roundish, obtuse, very rough above, pale and velvety beneath; stipules ovate, acuminate, rather small; panicle large, leafless; legume 3–4-jointed, on a stipe twice as long as the calyx, the joints half orbicular, connected by a narrow neck. — Rich open woods. August. — Stem 3°–4° high. Leaflets 2′–4′ long. Corolla turning greenish.

8. **D. ochroleucum,** M. A. Curtis. Stems decumbent, hairy; leaflets smoothish, ovate, reticulate; stipules large, ovate; racemes elongated; corolla whitish; legumes twisted, 2–4-jointed, the large joints rhomboid, smooth. — North Carolina, and northward.

9. **D. humifusum,** Beck. Nearly glabrous; stem prostrate; leaflets ovate, mostly obtuse, thin, faintly veined, 1′–1½′ long; stipules small, lanceolate; flowers small, purple; joints of the legume 3–4, triangular, minutely scabrous. — Open woods, Tennessee, and northward.

10. **D. rotundifolium,** DC. Stem long, trailing, hairy; leaflets orbicular, pubescent; stipules ovate, large, reflexed; racemes simple, the terminal ones panicled; lobes of the calyx longer than the tube; legume 2–4-jointed, very adhesive, the large joints half-rhombic. — Dry open woods. August. — Stem 3°–5° long. Flowers showy, occasionally yellowish white.

* * *Stipules subulate, deciduous: legume 3–5-jointed, nearly straight on the upper suture, the joints triangular, rarely rounded on the lower suture.*

11. **D. Canadense,** DC. Stem erect, hairy; leaves short-petioled; leaflets oblong-lanceolate, more or less hairy; panicle leafy; flowers and bracts large; legume with 3–4 rather large obtusely 3-angled joints. — Dry woods in the upper districts. August. — Stem 2°–3° high, furrowed. Upper leaves subsessile.

12. **D. Dillenii,** Darl. Stem erect, furrowed, hairy; leaflets oblong or ovate-oblong, obtuse, smoothish above, paler and pubescent beneath; panicle large, leafless, rough; joints of the legume 3–4, triangular. — Open woods, common. August. — Stem 2°–3° high. Leaflets 1′–2′ long. Bracts and flowers small.

13. **D. glabellum,** DC. Stem erect, nearly glabrous; leaflets small, ovate, obtuse, scabrous-pubescent on both sides; joints of the legume about 4, triangular, minutely hispid. — In shady places, North and South Carolina. — Resembles D. Marilandicum in foliage and D. paniculatum in fruit.

14. **D. lævigatum,** DC. Stem smooth, terete; leaflets thick, ovate, obtuse, smooth, or slightly pubescent and paler beneath; panicle leafless, rough; joints of the legume 3–4, triangular. (H. rhombifolium, *Ell.*) — Dry rich soil. August. — Stem 2°–4° high. Leaflets 1′–2′ long, the lateral ones occasionally wanting.

15. **D. paniculatum,** DC. Stem slender, mostly smooth, with long and virgate branches; leaflets varying from oblong to linear-lanceolate, obtuse, smooth or slightly pubescent; legume 3 – 5-jointed, the joints triangular. — Shady woods. August. — Stem 2° – 4° high. Leaflets rather rigid.

* * * *Stipules subulate, deciduous: legume 2 – 3-jointed; the joints small, oval, or obliquely obovate: flowers small.*

16. **D. tenuifolium,** Torr. & Gray. Stem slender, erect, rough-pubescent above; leaflets linear, reticulated, obtuse, smooth above, keeled, much longer than the short petiole; panicle leafless, very rough; flowers small; legume sessile, mostly 2-jointed. — Dry pine barrens, Florida to North Carolina. July – August. — Stem 2° – 3° high. Leaflets 2′ – 3′ long.

17. **D. strictum,** DC. Stem erect, mostly simple, straight and slender, smooth or roughish; leaves on short petioles; leaflets narrowly linear, rather obtuse, coriaceous, reticulated, nearly smooth; panicle virgate, few-flowered; the pedicels very slender; legume stipitate, 1 – 3-jointed. — Pine barrens. July – Sept. — Stem 2° – 4° high. Leaflets 1′ – 2′long.

18. **D. sessilifolium,** Torr. & Gray. Stem 2° – 3° high, branching, softly pubescent; leaves nearly sessile; leaflets 1′ - 2′ long, rather rigid, linear-oblong, obtuse, scabrous above, tomentose beneath; flowers crowded on the long branches of the panicle, short-pedicelled; joints of the nearly sessile legume 2 – 3, hispid. — Dry open woods, Tennessee, and northward.

19. **D. Marilandicum,** Boott. Stem erect, smooth, mostly simple; leaflets small, ovate or roundish, obtuse, smooth, pale beneath, commonly shorter than the petiole; panicle rough; legume mostly 2-jointed. (H. obtusum, *Ell.*) — Dry open woods. August. — Stem 2° – 3° high. Leaflets rarely more than 1′ long, sometimes oblong.

20. **D. ciliare,** DC. Very much like the last, but the stem and leaves rough-hairy, and the (sometimes acute) leaflets longer than the short petiole. — With the preceding.

21. **D. rigidum,** DC. Stem erect, branched, rough-pubescent; leaflets (pale) oval or oblong, obtuse, rough above, hairy beneath, strongly reticulated on both sides; panicle ample, leafy below; legume mostly 3-jointed. — Dry woods. August. — Stems 2° – 3° high. Leaflets 1′ – 3′ long.

22. **D. lineatum,** DC. Stem prostrate, slender, smooth; leaflets oval or roundish, smooth; racemes elongated, axillary and terminal, simple or paniculate, rough; legume 2 – 3-jointed. — Open grassy pine barrens in the lower districts. August. — Stem 1° – 2° long. Leaflets seldom more than 1′ long. Racemes 1° – 2° long.

23. **D. Floridanum,** Chapm. Stem short, rigid, very rough; lower leaves 1 – 3-foliolate; leaflets lanceolate-ovate, acute or obtuse, very rough above, pubescent and strongly reticulate beneath; stipules subulate; panicle elongated, sparingly branched, leafless; legume 2 – 4-jointed, the stipe shorter than the calyx; joints obliquely obovate. — Dry sandy soil near the coast. Florida. July – August. — Proper stem 1° high, the panicle 2° – 3°. Leaflets 2′ – 3′ long, the stipules and stipels rigid. Bracts and flowers small.

§ 3. *Legume sessile, nearly even on both sutures, the joints quadrangular.*

24. **D. triflorum,** DC. Creeping, pubescent; leaflets obcordate; peduncles axillary, single, or 2 – 3 together, 1-flowered; legume curved, 3 – 4-jointed. — Manatee, South Florida. Introduced. — Stem 6′ – 12′ long.

25. RHYNCHOSIA, DC.

Calyx 2-lipped, with the upper lip 2-cleft and the lower 3-parted, or nearly equally 4-parted. Stamens diadelphous (9 & 1). Style smooth, subulate. Legume oblong or scimitar-shaped, mostly 1 – 2-seeded. Seeds carunculate. — Erect or twining herbs or shrubs, with 1 or 3-foliolate, mostly softly-pubescent and resinous-dotted leaves, and axillary yellow flowers.

* *Stems twining, or low and erect: flowers in axillary racemes.*

+ *Calyx somewhat 2-lipped, 4-cleft; the teeth subulate, shorter than the corolla, the lowest one longest: stems twining.*

1. **R. minima,** DC. Tomentose; leaflets small, roundish or broadly rhombic, barely acute, dotted beneath; stipules subulate; racemes filiform, much longer than the leaves, loosely 6 – 12-flowered; flowers minute, reflexed; legumes scimitar-shaped. — Damp soil along the coast, South Carolina, and westward. July. — Leaflets ½′ – 1′ long.

2. **R. parvifolia,** DC. Velvety throughout; leaflets ovate, oblong, or obovate-oblong, obtuse, or the upper ones acute, hoary, and strongly reticulate beneath, longer than the petiole; stipules small, lanceolate; racemes equalling or longer than the leaves, slender, loosely 3 – 5-flowered; lowest tooth of the calyx nearly twice the length of the others; legume oblong, obtuse, clothed with soft down and longer hairs intermixed, 2 – 3-seeded. — South Florida. — Stem 1° – 2° long. Leaflets 1′ long.

3. **R. Caribæa,** DC. Velvety throughout; stem prostrate or twining; leaflets thin, ovate, acute or slightly acuminate; stipules ovate; racemes slender, shorter than the leaves, loosely 3 – 5-flowered; teeth of the calyx short, nearly equal; legume scimitar-shaped, acute. — South Florida. — Stem 2° – 3° long. Leaflets 1½′ – 2′ long. Racemes 1′ – 2′ long. Flowers small. Legume 1′ – 1½′ long, tapering at the base.

+ + *Calyx 4-parted, nearly as long as the corolla, the lobes linear or lanceolate, nearly equal: stems twining or erect.*

4. **R. menispermoidea,** DC. Stems several from one root, prostrate or twining, downy; stipules ovate-lanceolate; leaflets solitary, reniform, tomentose; peduncles rarely as long as the petiole, with few crowded flowers at the summit; calyx deeply parted, the lanceolate acute or acuminate lobes nearly equal; legume oblong, acute, tomentose, 2-seeded. — Charlotte Harbor, South Florida (*Blodgett*). — Stems 2° – 3° long. Leaflets 1′ – 2′ in diameter.

5. **R. tomentosa,** Hook. & Arn. Softly pubescent; stem trailing or climbing; leaflets oval or orbicular, often acute, ¾′ – 1½′ long; stipules lanceolate; racemes nearly sessile, cluster-like, few-flowered; calyx as long as the corolla, and half as long as the oval 2-seeded legume. — Dry sandy soil in the lower districts. June – August. — Stem 2° – 3° long. — Legume ½′ long.

6. **R. reticulata,** DC.? Stems several, prostrate, villous; leaves trifoliolate; leaflets thin, silky, oval or orbicular, slightly cordate, reticulate, 2′–3′ long, the lateral ones oblique; racemes single, or in unequal pairs, loosely 4–10-flowered, 2′–3′ long; calyx lobes lanceolate, as long as the corolla. — Dry sandy soil, Orange County, Florida. July. (*Fred. L. Lewton.*) — Stems 2° long. Legume not seen.

7. **R. erecta,** DC. Velvety-tomentose; stem erect, simple or branched; leaves trifoliolate; leaflets oblong-ovate, reticulate, acute; stipules subulate, persistent; racemes sessile, densely many-flowered; legume oblong. — Light dry soil. June – August. — Stem 1° – 2° high. Leaflets 1′ – 2′ long. Legume 8″ – 9″ long.

8. **R. reniformis,** DC. Villous; stem 2′ – 8′ high; leaves 1-foliolate, orbicular or reniform, hirsute beneath; stipules ovate-lanceolate, racemes nearly sessile, cluster-like; legume oblong. — Dry sandy soil in the lower districts. May – July.

9. **R. mollissima,** Shuttlw. Velvety tomentose; stem simple, 1° high; leaves trifoliolate; leaflets ovate, acute, 1′ long; stipules deciduous; racemes terminal, solitary, 4′ – 8′ long, loosely many-flowered; corolla longer than the calyx, — Dry sandy soil near the coast, Georgia and East Florida. Rare.

* * *Stem tall, erect, with long virgate branches: flowers solitary or by pairs, in the axils of the upper leaves: calyx deeply 4-cleft, shorter than the corolla.*

10. **R. galactioides,** Endl. Stem bushy, purplish, closely pubescent; leaves very small, almost sessile; leaflets 3, oval or obovate, rigid, reticulate, pubescent; flowers mostly longer than the leaves, yellow, the vexillum reddish externally; legume oblong, 2-seeded. (Pitcheria, *Nutt.*) — Dry sandy soil, Florida and Alabama. June. — Stem 2° – 4° high. Leaflets 3″ – 9″ long. Legume ¾′ long.

26. APIOS, Boerh. GROUND-NUT.

Calyx somewhat 2-lipped; the lateral teeth nearly obsolete, the lowest one longest. Vexillum very broad, reflexed; the keel at length twisted. Stamens diadelphous (9 & 1). Legume nearly terete, many-seeded. — A smooth perennial twining herb, with unequally pinnate leaves, and brownish purple flowers in dense axillary racemes.

1. **A. tuberosa,** Mœnch. — Swamps, Florida to Mississippi, and northward. July and August. — Root bearing small edible tubers. Stem twining high. Leaflets 5 – 7, ovate or ovate-lanceolate. Racemes often by pairs, shorter than the leaves. Seeds black, separated by loose cellular tissue.

27. PHASEOLUS, L. KIDNEY-BEAN.

Calyx 5-toothed, the two upper teeth more or less united. Keel of the corolla spirally coiled or twisted. Stamens diadelphous. Legume linear or falcate, few – many-seeded. — Twining or prostrate herbs, with trifoliolate stipellate leaves. Flowers commonly large, racemed, or clustered at the summit of the axillary peduncles.

* *Flowers scattered in long racemes: legumes scimitar-shaped.*

1. **P. perennis,** Walt. Stem climbing, pubescent; leaflets ovate, acute, entire, membranaceous; racemes often branching, twice as long as the leaves. — Low woods and margins of fields. July – August. ♃ — Leaflets 2′ – 4′ long. Flowers purple.

2. **P. sinuatus,** Nutt. Stem prostrate, smoothish; leaflets small (1′ long), roundish or 3-lobed, strongly reticulate, rather rigid; racemes 6 – 8 times as long as the leaves, solitary, simple. — Dry sandy pine barrens. Florida. July – August. ♃ — Stem 8° – 12° long. Flowers pale purple.

* * *Flowers clustered at the summit of the peduncles: legume linear, nearly terete: seed scurfy.* (STROPHOSTYLES, *Ell.*)

3. **P. diversifolius,** Pers. Annual; stems prostrate or trailing, rough-hairy; leaflets ovate, entire or 2 – 3-lobed; peduncles twice as long as the leaves. — Sandy soil. June – Sept. — Stems 2° – 4° long. Corolla purple, withering greenish.

4. **P. helvolus,** L. Perennial, smooth or hairy; stems prostrate, leaflets varying from ovate to oblong-linear, rarely 3-lobed; peduncles 3 – 6 times as long as the leaves. — Woods and margins of fields. June – Sept. — Corolla pale purple.

5. **P. pauciflorus,** Benth. Annual, softly pubescent; stem twining; leaflets 1′ – 1½′ long, oblong-ovate, obtuse; peduncles often shorter than the leaves, few-flowered; flowers small, legume broadly linear, compressed, hirsute, few-seeded; seeds oval, smooth. — Waste ground, Mississippi, Tennessee, and westward.

28. VIGNA, Savi.

Calyx 4-toothed, the upper tooth broader, entire or 2-cleft. Vexillum depressed-orbicular, with thickened knobs near the base. Keel not twisted. Stamens included in the keel, diadelphous, and with the style bent upward. Style hairy above, appendaged below the stigma. Legume nearly terete, somewhat torulose, the seeds separated by cellular tissue. — Twining herbs, with trifoliolate leaves, and racemose axillary flowers.

1. **V. luteola,** Benth. Annual, smooth or hirsute; leaflets ovate or ovate-lanceolate; racemes on stout peduncles longer than the leaves; flowers yellow, crowded; legume terete, hirsute. — Brackish marshes along the coast. July – Sept.

29. ERYTHRINA, L.

Calyx tubular-campanulate, truncate, toothless. Vexillum narrow, straight, elongated. Keel and wings very small. Stamens and style partly exserted. Legume stipitate, torulose, partly dehiscent. — Trees, shrubs, or rarely herbs, often armed with prickles. Leaves trifoliolate, the terminal leaflet long-petiolulate. Flowers showy, scarlet, in long racemes.

1. **E. herbacea,** L. Stems herbaceous, several from a very thick root, prickly, the flowering ones mostly leafless; leaves long petioled; leaflets ovate or somewhat hastate; vexillum lanceolate, folded; seeds scarlet. — Light

sandy soil, Florida to North Carolina, and west to Mississippi. April – May. — Stems 2° – 4° high. Racemes 1° – 2° long. Flowers 2′ long. Legume opening by one suture opposite the seeds.

Var. **arborea.** Stems woody, 10° – 20° high, widely branching at the summit; racemes axillary, few-flowered; flowers smaller; legume erect. — South Florida.

30. CLITORIA, L.

Calyx tubular, 5-toothed. Vexillum very large, spurless on the back, obovate, emarginate. Keel shorter than the wings. Stamens monadelphous below. Style curved, hairy. Legume stipitate, linear-oblong, torulose, veinless. — Perennial herbs, with trifoliolate leaves, and very large purple flowers on axillary peduncles. Bracts opposite.

1. **C. Mariana,** L. Smooth; stem erect or twining; leaflets ovate-oblong, pale beneath; peduncles shorter than the leaves, 1 – 3-flowered; legume 3 – 4-seeded. — Dry soil. July – August. — Stem 1° – 3° long. Flowers 2′ long, pale purple. Bracts shorter than the calyx. Legume $1\frac{1}{2}'$ – 2′ long.

31. CENTROSEMA, DC.

Calyx short, 5-cleft, the 2 upper lobes more or less united. Vexillum very large, spurred on the back, orbicular, emarginate. Keel nearly as long as the wings. Stamens monadelphous below. Style smooth. Legume nearly sessile, linear, compressed, the sutures thickened, the valves lined with an intra-marginal vein. — Twining herbs, with trifoliolate leaves, and very large purple flowers on short axillary peduncles. Bracts opposite.

1. **C. Virginiana,** Benth. Rough with a short hooked pubescence; stem very slender, much branched; leaflets ovate to linear-oblong, strongly reticulate; peduncles single or by pairs, 1 – 4 flowered; calyx teeth subulate, barely exceeding the ovate bracts; vexillum adhesive, legume slender, elongated, curved, many-seeded. — Dry soil. June – Sept. — Flowers $1\frac{1}{2}'$ long. Legume 4′ – 6′ long.

32. AMPHICARPÆA, Ell.

Flowers of two kinds; those on the upper racemes perfect, but mostly abortive, those near the base of the stem or on the prostrate branches apetalous, but fruitful. Calyx tubular, 4 – 5-toothed. Vexillum obovate and partly enclosing the wings and keel. Stamens diadelphous, or in the fertile flowers distinct or wanting. Fertile legume obovate, fleshy, 1 – 2-seeded. — Twining annual or perennial herbs, with trifoliolate leaves. Flowers white or purplish, in simple or compound axillary racemes.

1. **A. monoica,** Nutt. Hairy; stems much branched; leaflets rhombic-ovate; sterile racemes single or by pairs, often compound, nodding; bracts striate; calyx teeth short, triangular; fertile legumes hairy. Rich soil. August – Sept.

33. GALACTIA, P. Browne.

Calyx 4-toothed, the upper one broadest. Vexillum oblong or obovate, reflexed in flower. Stamens diadelphous. Legume more or less compressed, 2-valved, few – many seeded. — Prostrate or twining, rarely erect, perennial herbs, with chiefly trifoliolate leaves, and mostly small purplish or white flowers in axillary racemes. Bracts alternate and deciduous. Leaflets stipellate.

* *Leaves trifoliolate, with the leaflets stalked: stems twining or prostrate.*

1. **G. spiciformis,** Torr. & Gray. Stem twining, minutely pubescent; leaflets (1′ long) thick and rigid, oblong-oval, obtuse or emarginate at both ends, smooth above, pubescent beneath; racemes spike-like, mostly longer than the leaves; legume coriaceous, compressed, falcate, thickened at the sutures, sprinkled with short appressed hairs, 6 – 10-seeded. — South Florida. Aug. – Sept.

2. **G. pilosa,** Ell. Pubescent or smoothish; stem branching, twining, leaflets varying from oval to linear-oblong, obtuse; racemes (including the slender peduncle) 2′ – 10′ long, rarely reduced to a single sessile flower; flowers mostly single, distant; calyx smoothish; legume straight, slightly compressed, 10-seeded. (G. mollis, *Nutt.*) — Dry soil, common. July – August.

3. **G. mollis,** Michx. Villous and somewhat hoary; stems mostly prostrate and simple; leaflets oval or oblong, obtuse or emarginate at both ends, or the upper ones acute; racemes 6′ – 10′ long, the flowers, 2 – 3 together, approximate near the summit of the stout peduncle; calyx, like the straight 10-seeded compressed legume, very villous and hoary. (G. pilosa, *Nutt.*) — Dry sandy pine barrens. July – August. — Stem 2° – 3° long.

4. **G. filiformis,** Benth. Stem long, twining, villous; leaflets oval or oblong, silky beneath, shorter than the many-flowered curved racemes; flowers rather large, purple, the vexillum finely and obliquely striate with deeper lines; legume silky, falcate, compressed, 10-seeded. — Keys of South Florida. Nov.

5. **G. Floridana,** Torr. & Gray. Hoary-pubescent; stems prostrate; leaflets oval or oblong, rarely acute, reticulate; racemes simple or branched, often by pairs, many-flowered, rarely longer than the leaves; flowers large, approximate; legume flat, 10-seeded. — Var. MICROPHYLLA. Every way smaller, the leaflets (½′ – ¾′ long) acute or emarginate, the few flowers almost sessile in axillary clusters. — Dry sandy pine barrens, near the coast of Florida. June – August. — Stem 2° – 4° long. Leaflets 1′ – 2′ long.

6. **G. glabella,** Michx. Stem prostrate, minutely pubescent; leaflets rather rigid, oblong, rarely acute, smooth and shining above, slightly hairy beneath; racemes seldom as long as the leaves, 3 – 6-flowered; style elongated; legume slightly falcate, at length smoothish, 4 – 6-seeded. — Dry pine barrens. July – August. — Stems 2° – 3° long. Leaflets 1′ long. Flowers large, reddish purple.

* * *Leaves trifoliolate, with nearly sessile leaflets: stems erect.*

7. **G. brachypoda,** Torr. & Gray. Stems slender, branching, and, as well as the leaves and peduncles, smoothish; leaves long-petioled; leaflets oblong, obtuse; flowers few, somewhat clustered at the summit of the slender peduncle; calyx woolly. — Dry sandy pine barrens of Middle Florida. July–

August. — Stems 1° – 1½° high. Leaflets shorter than the petiole. Flowers small, purple.

8. **G. sessiliflora,** Torr. & Gray. Stem short, smooth, simple; leaflets oblong or linear-oblong, obtuse, smooth on both sides; flowers crowded in nearly sessile axillary clusters; calyx hairy. — Dry pine barrens, Florida to North Carolina. June – August. — Stem 6′ – 12′ high. Flowers white. Legume oblong-linear, tomentose, 6 – 8-seeded.

* * * *Leaves pinnate: stems twining.*

9. **G. Elliottii,** Nutt. Leaflets 7 – 9, elliptical-oblong, emarginate, nearly smooth and shining above, pubescent beneath; racemes longer than the leaves, few-flowered near the summit of the peduncle; corolla white tinged with red; legume oblong compressed, villous, falcate, 3 – 5-seeded. — Dry soil, Florida to South Carolina, near the coast. May – June. — Plant sometimes silky throughout.

34. CANAVALIA, DC.

Calyx tubular, 2-lipped; the upper lip larger, with two rounded lobes, the lower entire or 3-cleft. Vexillum large, orbicular, with two ridges within; keel incurved. Stamens monadelphous. Legume oblong-linear, compressed; the valves with a longitudinal ridge near the thickened upper suture. Seeds separated by interposed cellular tissue: hilum linear. — Prostrate or twining herbs, with trifoliolate leaves, and showy flowers in axillary racemes.

1. **C. obtusifolia,** DC. Smoothish; stem long, prostrate; leaflets thick, oval or orbicular, pointless; racemes stout, longer than the leaves, 6 – 8-flowered; flowers rose-color; legume 6-seeded. (C. rosea and C. miniata, *DC.*) — Sandy shores of St. Vincent's Island, Florida, and southward. July – Sept. — Stem 10° – 15° long Leaflets 3′ long. Legume 4′ – 5′ long, 1′ wide. Seeds brown.

2. **C. altissima,** Macfadyen. Frutescent; stem climbing; leaflets oblong, mucronate-awned; racemes many-flowered, the petals large, purple; legume slightly curved, 11-seeded, the seeds "ovoid, dark brown." — South Florida (*Feay*), climbing over the tallest trees. — Legume 8′ – 10′ long, 1′ – 1½′ wide.

3. **C. gladiata,** DC. Annual; stem climbing; leaflets thin, ovate; racemes many-flowered; petals white; legume falcate, 10 - 12-seeded; seeds oblong, brownish red. — South Florida. August. — Leaflets 3′ – 4′ long. Legumes 1° long, 1½′ wide. Seeds 1′ long.

35. DIOCLEA, HBK.

Calyx bibracteolate, 4-cleft. Vexillum obovate-oblong, with two callosities near the base, and a membranous expansion at the sides. Wings and keel nearly equal, oblong. Stamens diadelphous. Style hooked, glabrous. Legume oblong, compressed, coriaceous, narrowly 2-winged, few-seeded. Seeds oval, separated by a thin membrane. Hilum linear. — Trailing vines, with trifoliolate leaves and red or purple flowers in axillary racemes.

1. **D. Boykinii,** Gray. Perennial, pubescent; leaflets thin, large, orbicular, abruptly acute; racemes shorter than the leaves, many and densely

flowered at the summit of the stout peduncle; upper lip of the calyx entire; keel nearly straight; legume 4–5-seeded. — Banks of rivers, near Milledgeville, Georgia, and westward. June–July. — Stem 5°–10° long. Leaflets 3′–6′ in diameter. Flowers purple. Legume 2′ long, ½′ wide.

36. PISCIDIA, L. JAMAICA DOGWOOD.

Calyx campanulate, 5-toothed. Keel obtuse. Vexillum rounded. Stamens diadelphous at the base, monadelphous above. Style filiform, smooth. Legume stipitate, linear, contracted between the seeds, furnished with four membranaceous longitudinal wings. Seeds compressed. — Tropical trees. Leaves unequally pinnate. Flowers in terminal panicles.

1. **P. Erythrina,** L. Young branches, leaves, and panicle silky and hoary, at length smoothish; leaflets 7–9, oblong or obovate, abruptly acute, straight-veined, distinctly petiolulate; panicles axillary and terminal, many-flowered, shorter than the leaves; upper teeth of the calyx partly united; legume 6-seeded. — South Forida. March–April. — A small tree. Leaves deciduous. Corolla white, lined with red veins. Legume 2′ long, the broad wings wavy.

37. ECASTAPHYLLUM, P. Browne.

Calyx campanulate, unequally 5-toothed. Vexillum orbicular. Stamens 8 or 10, diadelphous. Ovary stipitate, 2-ovuled. Style short and slender. Legume orbicular, compressed, mostly 1-seeded. — Tropical shrubs, with pinnate leaves, and small flowers in short axillary panicles.

1. **E. Brownei,** Pers. Stem branching; leaf reduced to a single ovate acute leaflet, pubescent above, pale and velvety beneath; panicles cluster-like, shorter than the petiole; corolla white; legume 1-seeded. — Banks of rivers, South Florida. Nov. — Shrub 4°–8° high. Leaflet 3′–5′ long.

38. BAPTISIA, Vent.

Calyx campanulate, 4-cleft; the upper lobe broader and mostly emarginate. Vexillum roundish, with the sides reflexed; wings and keel straight. Stamens 10, distinct, shorter than the wings, deciduous. Legume stipitate, oval or oblong, inflated, few-seeded, pointed with the persistent style. — Erect widely branching perennial herbs. Leaves simple or palmately trifoliolate, withering-persistent. Stipules deciduous or persistent, rarely wanting. Flowers showy in terminal racemes, rarely axillary and solitary.

* *Leaves simple, sessile, or perfoliate.*

1. **B. simplicifolia,** Croom. Smooth; leaves large, sessile, broadly ovate, obtuse; stipules none; racemes numerous, terminal, many-flowered, sessile or short-peduncled; ovary villous and hoary; legume small, ovate, coriaceous, smooth. — Dry pine barrens near Quincy, Middle Florida. July. — Stem much branched, 2°–3° high. Leaves 2′–4′ long. Flowers rather small, yellow. Plant dries black.

2. **B. perfoliata,** Brown. Smooth; leaves perfoliate, oval or orbicular, glaucous; stipules none; flower axillary, solitary; legume small, ovate, coriaceous. — Dry sandy soil in the middle districts of Georgia and South Caro-

lina. May. — Stem 2° high. Leaves 2′-3′ long. Flowers small, yellow; vexillum orbicular, emarginate, shorter than the wings and keel. Ovary and style smooth.

* * *Leaves trifoliolate, petioled.*

+ *Flowers yellow.*

3. **B. lanceolata,** Ell. Pubescent when young, at length smoothish; leaves on very short petioles, the upper ones nearly sessile; leaflets varying from lanceolate to obovate, thick, obtuse, tapering at the base; stipules and bracts small and caducous; flowers large, solitary in the axils, and in short terminal racemes, short-pedicelled; ovary villous; legume ovate or globose, coriaceous, slender-pointed. — Dry pine barrens. April - May. — Stem 2° high. Leaflets 1′-2′ long. Plant turns black in drying.

4. **B. villosa,** Ell. Pubescent; leaves short petioled; leaflets oblong and obovate, tapering at the base, becoming smooth above; lower stipules and lanceolate bracts persistent; racemes many-flowered, declining; ovary villous; legume smoothish, coriaceous, oblong, strongly beaked. — Dry sandy soil, North Carolina. May. — Stem stout, 2° high. Leaves and flowers larger than in No. 3, the latter on slender pedicels. Plant turns black in drying.

5. **B. megacarpa,** Chapm. Stem smooth, with slender widely spreading branches; leaves on slender petioles; leaflets thin, elliptical or obovate, minutely pubescent and glaucous beneath; stipules and bracts caducous; racemes numerous, terminal and opposite the leaves, few-flowered; flowers large, pale yellow, on slender drooping pedicels; ovary smooth; legume large, thin, ovoid, slender-pointed. — Light rich soil, Gadsden County, Middle Florida. May. — Stem 2°-3° high. Leaflets 1½′-2′ long. Legume 1′-1½′ long. Plant unchanged in drying.

6. **B. tinctoria,** R. Brown. Smooth; branches slender, elongated; leaves small, on short petioles, the upper ones nearly sessile; leaflets wedge-obovate; stipules and bracts minute, caducous; racemes numerous, short, few-flowered; flowers small, on short and bractless pedicels; ovary smooth; legume small, roundish, slender-pointed. — Dry sandy soil. May - June. — Stem 2° high. Leaflets ½′-1′ long. Plant usually becomes blackish in drying.

7. **B. stipulacea,** Ravenel. Smooth; branches spreading; leaves small, short-petioled, 2-3-foliolate, the upper ones mostly simple and partly clasping; leaflets round-obovate, cuneate at the base; stipules and bracts large, round-cordate, persistent; flowers numerous, small, axillary, the upper ones racemose: pedicels short and bractless; ovary smooth, or slightly pubescent on the edges; legume small, ovoid, slender-pointed. (B. microphylla, *Nutt.*) — Sand-hills, near Aiken, South Carolina (*Ravenel*). June - July. — Stem 2°-3° high. Leaflets ½′-¾′ long. Plant nearly unchanged in drying.

8. **B. Lecontei,** Torr. & Gray. Pubescent; stem diffusely branched; leaves small, short-petioled; leaflets cuneate-obovate; stipules subulate and caducous, or the lower ones larger and persistent; racemes numerous, short, few-flowered, somewhat leafy at the base; bracts ovate-lanceolate, persistent; flowers small, on long 2-bracted pedicels; ovary villous; legume small, ovoid, slender-pointed. — Dry sandy soil, Florida and the southern parts of Georgia. May - June. — Stem 2° high. Leaflets 1′ long. Plant unchanged in drying.

9. **B. calycosa,** Canby. Smoothish, much branched; leaflets wedge-obovate; stipules and bracts lanceolate, persistent; racemes numerous, terminal, the long (1′ - 2′) pedicels bibracteolate; lobes of the calyx lanceolate, leafy, 4 times as long as the tube, and barely shorter than the yellow petals; legume ovate, acuminate, as long as the calyx. — Near St. Augustine, East Florida (*Miss Reynolds*).

10. **B. Serenæ,** M. A. Curtis. Very smooth, branching; leaves petioled; leaflets oblong-obovate, cuneate; flowers in a long loose central raceme, and in short racemes terminating the branches; pedicels longer than the calyx in fruit; segments of the calyx villous on the inside; legume oblong, inflated, the stipe longer than the calyx. — Society Hill, South Carolina (*Curtis*). May - June. — Stem diffusely branched, 1° - 2° high. Leaflets 1′ long. Legume 8″ long. Plant unchanged in drying.

+- +- *Flowers white.*

11. **B. alba,** R. Brown. Smooth and glaucous; branches slender, flexuous, horizontal; leaves all distinctly petioled; leaflets thin, cuneate-lanceolate or oblong, obtuse; stipules and bracts minute, caducous; raceme usually solitary, central, very long, those on the branches few-flowered; legume cylindrical. — Dry woods, North Carolina, and westward. April. — Stem 2° - 3° high, often purple. Leaflets 1′ long. Racemes 1° - 3° long. Corolla ½′ long. Plant unchanged in drying.

12. **B. leucantha,** Torr. & Gray. Smooth and glaucous; branches spreading, leaves short-petioled; leaflets oblong and obovate, obtuse; stipules lanceolate, as long as the petioles, deciduous; racemes central, and terminating the branches, long, many-flowered; ovary smooth; legume large, oblong, much inflated, long-stipitate. — River banks, South Carolina, and westward. March - April — A stouter plant than the preceding, with larger leaves and flowers, changing blackish in drying. Legumes 1½′ long.

13. **B. leucophæa,** Nutt. Hairy or smoothish; stem stout, angled; leaves short-petioled; leaflets varying from oblanceolate to obovate, rigid, reticulate, soon smooth above; stipules and bracts leafy, ovate-lanceolate, persistent; racemes stout, declined, 1-sided; flowers large, yellowish white, on long and slender erect pedicels; ovary villous; legume ovoid, long-pointed. — Dry rich oak woods, Georgia, and westward. April. — Stem low, with widely spreading branches. Racemes 4′ - 12′ long. Flowers 1′ long, the vexillum spotted with brown. Plant turns black in drying.

+- +- +- *Flowers blue.*

14. **B. australis,** R. Brown. Smooth; leaves all short-petioled; leaflets cuneate-obovate; stipules leafy, lanceolate, twice as long as the petioles; racemes large, erect, many-flowered; flowers (indigo blue) very large; bracts deciduous; legume oblong. — Banks of rivers, Georgia (*Pursh*), and westward. June - July. — Stem 2° - 3° high. Flowers 1′ or more long. Legume 2′ long. Plant unchanged in drying.

39. THERMOPSIS, R. Brown.

Stamens mostly persistent. Legume linear or oblong-linear, nearly sessile, flattened, many-seeded. Stipules leafy, persistent. Otherwise chiefly as in Baptisia. Flowers yellow.

1. **T. Caroliniana,** M. A. Curtis. Stem stout, simple, smooth; leaves long-petioled; leaflets membranaceous, obovate-oblong, silky beneath; stipules very large, ovate or oblong, clasping; racemes elongated, villous, erect, rigid, many-flowered; flowers on short pedicels; bracts ovate, deciduous; legumes oblong-linear, erect, straight, villous and hoary, 10-12-seeded. — Mountains of North Carolina. May-July. — Stem 3° - 5° high. Raceme 6′-12′ long. Legume 2′ long.

2. **T. fraxinifolia,** M. A. Curtis. Stem branching, slender, smoothish; leaves long-petioled; leaflets oblong, narrowed at the base, often acute, smooth above, glaucous and slightly pubescent beneath; stipules lanceolate, much shorter than the petioles; racemes erect, glabrous; flowers on slender spreading pedicels; bracts small, lanceolate, persistent; legume linear, falcate, pubescent, spreading, short-stipitate, 10-seeded. — Mountains of North Carolina. — Stem 2° high. Legume 3′ long.

3. **T. mollis,** M. A. Curtis. Pubescent; stem diffusely branched; leaflets obovate-oblong; stipules leafy, oblong-ovate, as long as the petioles; racemes declined; pedicels shorter than the calyx and lanceolate bracts; legume linear, flat, short-stipitate. (Baptisia mollis, *Michx.*) — Rocky woods in the middle districts of North Carolina. April-May. — Stem 2° high. Legume 2′-3′ long, many-seeded.

40. CLADRASTIS, Raf. Yellow-Wood.

Calyx 5-toothed; the nearly equal teeth short and obtuse. Vexillum large, roundish, reflexed, scarcely longer than the oblong wings and separate keel petals. Stamens 10, distinct; filaments slender, incurved above. Legume short-stipitate, linear, flat, thin, marginless, 4-6-seeded, at length 2-valved. — A small tree, with yellow wood, pinnate leaves, and large white flowers in terminal drooping panicled racemes.

1. **C. tinctoria,** Raf. (Virgilia lutea, *Michx.*) — Hillsides, in rich soil, Tennessee and Kentucky. May. — Leaflets 7-11, oval or ovate, acute, smooth, parallel-veined, 3′-4′ long; the common petiole tumid at the base. Stipules none. Racemes 1° long. Flowers 1′ long.

41. SOPHORA, L.

Calyx campanulate, obliquely truncated or 5-toothed. Stamens 10, free or cohering at the base. Legume moniliform, wingless, many-seeded, indehiscent. Seeds subglobose. — Trees or shrubs, with unequally pinnate leaves. Flowers in axillary and terminal racemes.

1. **S. tomentosa,** L. Hoary-tomentose; leaflets 11-17, oblong, coriaceous, becoming smooth above; raceme elongated; calyx minutely 5-toothed. — South Florida, near the coast. — Shrub 4° - 6° high. Flowers showy, yellow. Legume stipitate, 5′ long.

Suborder II. CAESALPINIEÆ. (Brasiletto Family.)

42. CERCIS, L. Red-bud.

Calyx cup-shaped, 5-toothed. Petals all distinct, the vexillum shorter than the wings. Stamens 10, distinct. Legume oblong, compressed, many-seeded;

the upper suture winged. — Trees, with broadly cordate simple stipulate leaves, and reddish purple clustered flowers appearing before the leaves.

1. **C. Canadensis,** L. — Rich soil. Feb. - March. — Tree 15° - 20° high. Flowers very numerous, from lateral buds.

43. CASSIA, L. Senna.

Calyx of 5 nearly distinct sepals. Petals 5, unequal. Stamens 5 - 10. Anthers mostly of different forms, opening by two terminal pores. Legume many-seeded. Seeds often separated by cross partitions. — Herbs or shrubs. Leaves abruptly pinnate. Flowers yellow.

* *Stamens* 10, *unequal: part of the anthers abortive: sepals obtuse: stipules deciduous.*

1. **C. occidentalis,** L. Annual, smoothish; stem stout, branching; leaflets about 10, ovate or ovate-lanceolate, acute; petiole with a globular gland at the base; racemes 2 - 4-flowered, the upper ones crowded. — Waste places, common. — Stem 1° - 5° high. Legume linear, compressed, slightly incurved, 3′ - 4′ long.

2. **C. obtusifolia,** L. Annual, roughish; stem slender, leaflets 6, cuneate-obovate, with a tooth-like gland between the lowest pair; flowers by pairs; legume narrow-linear, 4-angled, recurved. — With the preceding. — Stem 1° - 4° high. Legume 6′ - 10′ long.

3. **C. Marilandica,** L. Perennial, smoothish; leaflets 12 - 18, oblong, acute; petiole with a club-shaped gland near the base; racemes several-flowered, the upper ones crowded, forming a compact panicle; legume linear, curved. — Rich soil. August. — Stem 3° - 4° high. Legume 3′ - 4′ long.

Var.? **Floridana**. Leaflets smaller (1½′ long), often alternate; pedicels longer (1½′ long); legumes straight, flat, 3″ wide; seeds orbicular; flowers not seen. — St. John's County, East Florida (*Mr. Sedding*).

4. **C. ligustrina,** L. Smooth or nearly so; stem branched; leaflets 6 - 10, oblong, mucronate, very oblique at the base, with a conical gland on the petiole or between the lowest pair of leaflets; flowers in a terminal panicle, on slender pedicels; sepals oblong-obovate; petals veiny; legume (3′ - 4′ long) broadly linear, flat, straight or somewhat falcate, many-seeded. — South Florida. Feb. — Leaflets 9″ - 12″ long. Legumes 4″ wide.

5. **C. biflora,** L. Shrubby; leaflets 4 - 10, oblong, narrowed at the base, mucronate, with an obovoid gland between the lowest pair; racemes 2 - 4-flowered, often by pairs, slender, shorter than the leaves; fertile anthers 5; legume linear, flat, straight or somewhat falcate, smooth, many-seeded. — Key West. — Leaflets 1′ long. Legume 3′ long, 2″ wide.

* * *Stamens* 5 - 10*: anthers all perfect: sepals acute: stipules persistent: legumes erect.*

6. **C. Chamæcrista,** L. Annual; stem smooth or rusty-hairy; leaflets small, numerous, linear-oblong, mucronate; stipules acuminate, nerved; flowers borne above the axils, large, clustered, on long pedicels; anthers 10; style slender; legume linear, nearly straight. — Dry barren soil. July - August. — Stem 1° - 1½° high. Part of the petals often purple at the base.

7. **C. nictitans,** L. Annual; pubescent; leaflets numerous, oblong-linear; stipules and bracts subulate; flowers small, 2 – 3 in a cluster above the axils, on short pedicels; petals unequal; stamens 5, nearly equal.

Var. **aspera.** (C. aspera, *Ell.*) Hirsute; stamens 7 – 9, very unequal; ovary very hairy; flowers larger. — Dry old fields, Florida to North Carolina, and westward. August. — Stem 1° high, often prostrate. Leaflets about 40, sensitive, like those of the preceding species.

44. GLEDITSCHIA, L. Honey-Locust.

Flowers polygamous. Sepals 3 – 5, united at the base, spreading. Petals as many, or less by the union of the two lower ones. Stamens 3 – 5, distinct, inserted with the petals on the base of the calyx. Legume stipitate, flat, 1 – many-seeded. Seeds compressed. — Thorny trees. Leaves abruptly 1 – 2-pinnate, with oblong serrate leaflets. Flowers small, greenish, in short spikes.

1. **G. triacanthos,** L. Leaflets lanceolate-oblong; thorns mostly compound; legume very long, many-seeded, pulpy within. — Rich woods. June – July. — A large tree. Legume 12′ – 18′ long, 1′ wide, twisted.

2. **G. monosperma,** Walt. Leaflets ovate or oblong; thorns mostly simple; legume short, obliquely oval, 1-seeded, not pulpy. — Deep river swamps, Florida to Tennessee, and westward. July. — A small tree. Legume 1′ long.

45. GYMNOCLADUS, Lam. Coffee-Tree.

Flowers polygamo-diœcious, tomentose. Calyx narrowly funnel-shaped, 5-cleft. Petals 5. Stamens 10, separate. Style long, exserted. Legume woody, pulpy within, few-seeded, the seeds large, compressed. — A slender tree, with thick thornless branches, very large bipinnate leaves, and small whitish flowers in axillary racemes.

1. **G. Canadensis,** Lam. — Rich woods, Tennessee, and northward. May. — Leaves 2° – 3° long. Leaflets ovate, the lowest pair borne on the common petiole, and larger. Legume 6′ – 10′ long, 2′ wide, 6 – 8-seeded.

46. CÆSALPINIA, L.

Sepals unequal, united into a cup-shaped base. Petals 5, unequal, clawed. Stamens 10, all fertile, the long filaments ascending, and hairy at the base. Style filiform. Legume echinate or unarmed, compressed, wingless, 1 – many-seeded. — Trees or shrubs, with abruptly bipinnate leaves, and racemose mostly yellow flowers.

1. **C. pauciflora,** Benth. & Hook. Glabrous, armed with rather stout stipular and stipellate recurved spines; pinnæ 2 – 4 pairs; leaflets 3 – 5 pairs, obovate, rounded at each end (4″ – 5″ long); racemes simple, loosely few-flowered; sepals obovate-oblong, little shorter than the yellow corolla and the slightly exserted stamens; legumes short, short-stipitate, obliquely acuminate, 1 – few-seeded. — Big Pine Key, South Florida (*Curtiss*). — A low shrub.

2. **C. Bonduc,** Benth. & Hook. Leaflets 5 – 8 pairs, obliquely oval, mucronate, the stipular thorns 2 – 3; racemes long, densely many-flowered; calyx lobes downy within, shorter than the long recurved deciduous bracts; legume ovate, 1-seeded. — South Florida. — A tall shrub. Leaflets ½′ – 1′ long. Racemes 1° long. Flowers yellow.

47. PARKINSONIA, Plum.

Sepals 5, equal, recurved. Petals 5, ovate, the upper one roundish, long-clawed. Stamens 10. Style filiform. Legume linear-oblong, compressed-moniliform, several-seeded. — A spiny shrub. Leaves pinnate, with the petiole broadly winged, the numerous leaflets small, often deciduous or abortive. Flowers showy, yellow, in terminal racemes.

1. **P. aculeata,** L. — Key West, escaped from cultivation.

SUBORDER III. MIMOSEÆ. MIMOSA FAMILY.

48. MIMOSA, L. SENSITIVE PLANT.

Flowers polygamous. Calyx minute, 4 – 5-toothed. Petals united into a 4 – 5-cleft tubular-campanulate corolla. Stamens 4 – 15, distinct, much exserted. Legume compressed, mostly jointed, 1 – many-seeded; the broad valves separating at maturity from the persistent margins. — Herbs, shrubs, or trees. Leaves bipinnate, sensitive. Flowers white or rose-color, capitate or spiked, on axillary peduncles.

1. **M. strigillosa,** Torr. & Gray. Herbaceous and rough with scattered appressed rigid hairs; stem prostrate; leaves long-petioled; pinnæ 5 – 6 pairs; leaflets 10 – 14 pairs, oblong-linear; peduncles longer than the leaves; heads of flowers elliptical; legume oval or oblong, 1 – 3-jointed, hispid. — Banks of rivers, Florida, and westward. July – August. — Flowers rose-color.

M. PUDICA, L., the common SENSITIVE PLANT, is partially naturalized in some localities.

49. SCHRANKIA, Willd. SENSITIVE BRIER.

Flowers polygamous. Calyx minute. Corolla funnel-shaped, 5-cleft. Stamens 8 – 10, distinct, exserted. Legume not jointed, prickly, 1-celled, many-seeded; the narrow valves separating at maturity from the broad margins. — Perennial prostrate herbs, with bipinnate sensitive leaves, and purple flowers in globose axillary peduncled heads. Stem, petioles, peduncles, and legumes beset with short recurved prickles.

* *Lower surface of the leaflets reticulate with elevated veins.*

1. **S. uncinata,** Willd.? Stem stout, grooved; leaves approximate; pinnæ 4 – 7 pairs; leaflets 25 – 30, oblong, acute, 3″ – 4″ long; peduncles mostly single, shorter than the leaves; legumes 2′ – 3′ long, linear, short-pointed, thickly armed with rigid prickles, about the length of the peduncle. — West Tennessee, and westward. July.

2. **S. Floridana,** n. sp. Stem long, slender, 4-angled; leaves few and distant, long-petioled; pinnæ 2–3 pairs; leaflets 30–40, oblong-linear, mucronate, 2″ long; peduncles single, shorter than the petioles; legumes 3′–4′ long, filiform, armed with few weak and scattered prickles, long-pointed. — Sandy barrens, South Florida.

* * *Veins of the leaflets obscure on both surfaces.*

3. **S. angustata,** Torr. & Gray. Stem, etc. armed with scattered weak recurved prickles; pinnæ 4–6 pairs; leaflets about 30, linear-elliptical; peduncles single or by pairs, much shorter than the leaves; legume narrow-linear, 3–4 times as long as the peduncle, ending in a long subulate smoothish point.

4. **S. horridula,** (Michx.?). Stem prostrate, very prickly; pinnæ 5–8 pairs; leaflets 30–40, linear, 1″ long; peduncles single, or 2–4 in a cluster, the uppermost often racemed; legume terete, 1′–2′ long, thickly armed with strong prickles, broadly linear, abruptly short-pointed, mostly shorter than the peduncle. (Mimosa, *Michx.*) — Dry pine barrens in the lower districts. July–August.

Var.? **angularis.** Stouter and less prickly; leaflets longer (2″ long); legume 4-angled, armed with scattered prickles, longer than the peduncle. — Dry open woods in the upper districts. July.

50. PITHECOLOBIUM, Martius.

Flowers perfect, rarely polygamous. Calyx tubular-campanulate, 4–5-toothed. Corolla tubular-funnel-shaped, 4–5-cleft. Stamens 10 or more, long-exserted, monadelphous near the base. Style filiform. Legume broadly linear, compressed, contorted or falcate, transversely partitioned, mealy or pulpy within. Seeds lenticular. — Trees or shrubs, often armed with stipular spines. Leaves pinnate or bipinnate. Flowers chiefly capitate, axillary and terminal.

1. **P. Unguis-Cati,** Benth. Unarmed or spiny; leaves bipinnate; leaflets 4, thin, broadly and obliquely obovate, the partial petioles much shorter than the common one; heads globose, in a loose raceme; calyx teeth short, ciliate; corolla yellowish, smooth; stamens crispid, twice as long as the corolla; ovary smooth. (Inga, *Willd.*) — South Florida. — Leaflets 1′–1½′ long, light green.

2. **P. Guadalupense,** Chapm. Unarmed; leaves bipinnate; leaflets 4, coriaceous, obliquely oblong or obovate, the common and partial petioles nearly equal; peduncles solitary, axillary, longer than the leaves, or the upper ones racemose; calyx and corolla pubescent; stamens 30 or more, 3–4 times as long as the corolla; ovary pubescent; legume smooth, falcate or hooked. (Inga, *Desv.*) — South Florida. — Leaflets 1′ long, deep green. Legume 2′–4′ long. Flowers yellowish.

51. ACACIA, Necker.

Flowers polygamous. Calyx 4–5-toothed. Petals 4–5, separate or united in a tube. Stamens numerous, inserted on the base of the corolla. Legume 2-valved, many-seeded. — Mostly trees or shrubs, with pinnately compound leaves, and small flowers in spikes or heads. — Ours introduced, and sparingly spontaneous around homesteads.

1. **A. filicina,** Willd. Herbaceous, unarmed, hirsute; stem erect; leaves bipinnate; leaflets 50 – 60, very small, oblong-linear; stipules deciduous; heads peduncled, axillary and terminal; flowers white; "legume flat, few-seeded." — Gainesville, Florida (*Garber*). — From Mexico.

2. **A. Farnesiana,** Willd. (OPOPONAX.) Shrubby, spiny, glabrous; pinnæ about 6 pairs; leaflets 12 – 18 pairs, oblong-linear; stipular spines long, straight; heads globose, on axillary single or clustered peduncles; flowers yellow, fragrant; legume terete, torulose. — From West Indies.

3. **A. Julibrissin,** Willd. Arborescent, unarmed, glabrous; pinnæ 8 – 12 pairs; leaflets about 30 pairs, oblong, oblique; heads in a terminal panicle; flowers flesh-color; stamens long-exserted; legume flat, oblong, few-seeded. — From Asia.

4. **A. glauca,** Willd. Unarmed, glabrous; pinnæ 4 – 5 pairs; leaflets 12 – 15 pairs, linear, distant, acute, glaucous beneath; heads single or by pairs on axillary peduncles. — From West Indies.

5. **A. latisiliqua,** Willd. Unarmed, glabrous; pinnæ 5 pairs; leaflets 10 pairs, elliptical; heads panicled; flowers white; legume flat, stipitate, many-seeded. — A shrub or small tree. — From West Indies.

52. DESMANTHUS, Willd.

Flowers polygamous. Calyx 5-toothed. Corolla of 5 oblong-spatulate petals, or tubular and 5-cleft. Stamens 5 – 10. Filaments of the lower flowers sterile. Legume linear or oblong, continuous, 2-valved. — Herbs or shrubs, with abruptly bipinnate leaves, and heads or spikes of white flowers borne on axillary peduncles. Leaves sensitive.

1. **D. depressus,** Humb. & Bonpl. Stems slender, prostrate, shrubby at the base; pinnæ 2 pairs; leaflets oblong-linear, very obtuse, oblique and almost truncate at the base; peduncles 2 – 4-flowered, the two upper flowers (sometimes all) perfect; stamens 10; legume linear, many-seeded; seeds angular, compressed. — South Florida. — Stems 1° – 2° long. Legume 1′ – 1½′ long.

2. **D. virgatus,** Willd. Stem erect, rather rigid, smoothish, angled; pinnæ 1 – 7 pairs; leaflets numerous, oblong-linear; a rather large ovate gland below the lowest pinnæ; heads few-flowered; stamens 10; legume straight, linear, 10 – 30-seeded. — South Florida. — Stem 1° – 2° high.

3. **D. brachylobus,** Benth. Smooth; stem erect; pinnæ 6 – 14 pairs, each with a minute gland at the base; leaflets numerous, linear; heads globose; stamens 5; legumes oblong, curved, 4 – 6-seeded. (Darlingtonia, *DC.*) — Mississippi (*Carpenter*).

4. **D. luteus,** Benth. Stems ascending, rough with short rigid hairs; pinnæ 4 – 5 pairs; leaflets numerous, linear-oblong, mucronate, fringed on the margins, veiny beneath; stipules ovate, acuminate; peduncles longer than the leaves, rough, minutely bracted; heads oval or oblong, many-flowered, nod-

ding; petals distinct; sterile filaments 8 – 10, yellow, spatulate-linear; fertile ones 10, white; legume oblong, 5 – 8-seeded. — Damp soil near the coast, Florida, and westward. June. ♃ — Stems 1° – 2° long.

ORDER 48. ROSACEÆ. (ROSE FAMILY.)

Herbs, shrubs, or trees, with alternate stipulate leaves, and regular flowers. — Calyx of 3 – 8 (mostly 5) more or less united sepals, and often with as many bracts. Petals as many (rarely none), inserted with the few or numerous distinct stamens on the edge of the disk which lines the tube of the calyx, mostly imbricated in the bud. Ovaries 1 – several, free, or more or less united with the calyx and with each other, 1 – few-ovuled. Seeds anatropous, and, with few exceptions, without albumen. Embryo straight, with large and thick cotyledons. Fruit various.

Synopsis.

SUBORDER I. CHRYSOBALANEÆ. Calyx bractless, free from the solitary ovary. Style single, arising from the base of the ovary. Ovules erect. Fruit a drupe. — Trees or shrubs. Leaves simple.

1. **CHRYSOBALANUS.** Calyx limb persistent. Stone grooved. Shrubs.

SUBORDER II. AMYGDALEÆ. Calyx bractless, free from the solitary ovary. Style single, terminal. Ovules suspended. Fruit a drupe. Leaves simple.

1. **PRUNUS.** Calyx limb deciduous. Stone even, or grooved on the margins.

SUBORDER III. ROSACEÆ. Calyx 3 – 5-cleft, the lobes often alternating with as many bracts, free from the 1 – several ovaries. Style lateral or terminal. Fruit a 1 – 10-seeded follicle, or a 1-seeded achenium. — Herbs or shrubs. Leaves mostly lobed or compound.

* Fruit a 1 – 10-seeded follicle.

3 **PHYSOCARPUS.** Petals imbricated. Carpels inflated, 2-valved. Seed albuminous.
4. **SPIRÆA.** Petals obovate or roundish, imbricated in the bud. Carpels 1-valved.
6. **GILLENIA.** Petals linear-lanceolate, convolute in the bud.

* * Fruit a 1-seeded achenium.

+ Fruiting calyx dry, the lobes mostly valvate in the bud. Achenia few, or numerous and collected into a head.

++ Calyx-tube contracted at the throat (except No. 5). Achenia 1 – 4.

5. **NEVIUSIA.** Petals none. Stamens indefinite. Calyx lobes serrate.
7. **AGRIMONIA.** Petals 5. Stamens 5 – 15. Calyx bristly.
8. **POTERIUM.** Petals none. Stamens 4. Style terminal.
9. **ALCHEMILLA.** Petals none. Stamens 1 – 4. Style lateral.

++ ++ Calyx open, bracted. Stamens and dry achenia numerous, the latter rarely 2 – 4.

= Seeds erect.

10. **GEUM.** Style persistent. Achenia numerous.
11. **WALDSTEINIA.** Style deciduous. Achenia 2 – 6.

= = Seeds suspended or ascending.

12. POTENTILLA. Receptacle flat or convex, dry.
13. FRAGARIA. Receptacle conical, enlarged and fleshy in fruit.

++ ++ ++ Calyx open, bractless. Stamens and juicy achenia numerous.

14. RUBUS. Achenia crowded on the conical receptacle.

— — Calyx tube fleshy, urn-shaped; the lobes imbricated in the bud. Achenia numerous inserted on the receptacle which lines the inside of the calyx tube.

15. ROSA. Achenia dry and hairy. Prickly shrubs.

SUBORDER IV. POMEÆ. Calyx including and cohering with the 1 – 5 ovaries, very thick and fleshy in fruit.

16. CRATÆGUS. Fruit of 1 – 5 bony 1-seeded nutlets.
17. PYRUS. Fruit of 2 – 5 cartilaginous or membranaceous 2-seeded cells.
18. AMELANCHIER. Fruit of 3 – 5 2-seeded cells; seeds separated by a false partition.

1. CHRYSOBALANUS, L.

Calyx bell-shaped, 5-cleft, persistent. Petals 5. Stamens about 20; the inner ones often shorter and sterile Ovary with 2 collateral erect ovules; the style arising from its base. Drupe 1-seeded; the stone grooved. — Unarmed shrubs. Leaves nearly sessile, entire, with minute stipules. Flowers small, in axillary or terminal paniculate cymes.

1. **C. oblongifolius,** Michx. Leaves somewhat coriaceous, oblong, smooth on both sides, or hoary-pubescent beneath, deciduous; cymes many-flowered; stamens and ovary smooth; drupe ovoid. — Dry sandy pine barrens in the lower districts. May. — Stems creeping, the flowering branches 6′ – 12′ high. Leaves 3′ – 4′ long. Flowers greenish white.

2. **C. Icaco,** L. (COCOA PLUM.) Leaves round-obovate, smooth, coriaceous; cymes few-flowered; stamens and ovary hairy; drupe large, roundish. — South Florida. — Shrub 4° – 12° high. Leaves 2′ long, 1½′ wide. Drupe yellow, purple, or black.

2. PRUNUS, L. PLUM, CHERRY.

Calyx 5-cleft, deciduous. Petals 5, spreading Stamens 15 – 30. Ovary with 2 collateral suspended ovules. Style terminal. Drupe fleshy; the stone even. — Trees or shrubs. Leaves simple. Flowers white.

§ 1. PRUNUS. (PLUM.) — *Drupe glaucous: stone more or less compressed: leaves convolute in the bud: flowers in lateral clusters, appearing before the leaves: branches often spiny.*

1. **P. Americana,** Marsh. Leaves thick, ovate or somewhat obovate, acuminate, rounded or slightly cordate at the base, pubescent beneath, sharply serrate, on glandular petioles; drupe large, globose. — Woods. March – April. — A small tree. Leaves 2′ – 3′ long, smooth when old. Flowers very numerous. Plum reddish, ½′ – 1′ in diameter, pleasantly acid, ripening in September.

2. **P. umbellata,** Ell. Leaves thin, ovate-lanceolate or oblong, acute at both ends, or the upper ones rounded at the base, finely and sharply serrate, smooth, or soft-downy beneath; calyx teeth emarginate, pubescent; drupe

globose; stone slightly compressed. — Dry light soil, Florida and Alabama to South Carolina. Feb. – March. — A shrub or small tree. Branches purple, shining. Leaves 1′ – 1½′ long. Plum rarely ½′ in diameter, dark purplish or black, sour and bitter, ripening in August.

3. **P. Chicasa,** Michx. Leaves thin, lanceolate or oblong-lanceolate-acute, smooth, minutely and sharply serrate, with the teeth glandular and incurved; flowers short-peduncled; calyx smooth; drupe yellowish red, globose. — Old fields, forming thickets. March. — A shrub or small tree. Leaves 1½′ – 2′ long. Plum about ½′ in diameter, thin-skinned and of an agreeable flavor.

4. **P. gracilis,** Gray & Engelm. Low and bushy, the pubescent branches often spiny; leaves short-petioled, ovate, acute, unequally serrate, glabrate above, pale and villous beneath, 1′ – 2′ long; clusters 2 – 3-flowered; calyx pubescent; drupe globose, 6″ – 9″ in diameter. — Lookout Mountain, Tennessee (*Gattinger*), and westward.

5. **P. maritima,** Wang. Low and straggling, spineless; leaves ovate or obovate, acute or acuminate, sharply serrate, glabrate; clusters few-flowered; drupe red or purplish, ½′ in diameter. — Alabama (*Buckley*).

§ 2. CERASUS. (CHERRY.) — *Drupe not glaucous: stone globular or slightly compressed: leaves folded in the bud, deciduous. — Spineless shrubs or trees.*

* *Flowers clustered.*

6. **P. Pennsylvanica,** L. Leaves thin, ovate-lanceolate, acuminate, finely and sharply serrate, green and smooth on both sides; flowers several in a cluster, on long peduncles; drupe globose, light red. — Mountains of North Carolina. May. — A small tree. Fruit small and sour.

* * *Flowers in racemes terminating leafy branches.*

7. **P. serotina,** Ehrhart. Leaves smooth, varying from oval to ovate, lanceolate, mostly acute or acuminate, serrate, with the teeth callous and appressed; racemes long, spreading; drupe globose, purplish black. — Woods. April – May. — A tree 20° – 60° high.

8. **P. Virginiana,** L. Smooth throughout, or the lower surface of the leaves, branches, and racemes more or less pubescent; leaves thin, oval, oblong or obovate, finely and sharply serrate, abruptly acute or acuminate; racemes rather short and erect; drupe red. — Light sandy soil in the upper districts. April. — Shrub 3° – 9° high. Leaves 1′ – 3′ long. Drupe astringent.

§ 3. LAUROCERASUS. (CHERRY LAUREL.) — *Drupe not glaucous: stone globular: flowers in racemes from the axils of evergreen leaves.*

9. **P. Caroliniana,** Ait. (MOCK ORANGE.) Leaves coriaceous, smooth and glossy, ovate-lanceolate, acute, mostly entire; racemes shorter than the leaves, white; drupe ovoid, soon dry, black. — Banks of rivers, Florida to North Carolina, and westward. Feb. – March. — A small tree.

10. **P. sphærocarpa,** Swartz. Racemes small, erect, shorter than the leaf; leaves elliptical, entire, shining; flowers scattered; drupe sub-globose. — Key Biscayne (*Curtiss*), South Florida. — A small tree, 10° – 15° high.

3. PHYSOCARPUS, Maxim. NINE-BARK.

Carpels inflated, 2-valved, 2 – 4-seeded. Seeds roundish, crustaceous. Albumen copious. Otherwise like *Spiræa.* — Shrubs. Leaves palmately lobed or veined.

1. **P. opulifolius,** Maxim. Leaves broadly ovate or cordate, 3-lobed, doubly crenate-serrate, smooth; corymbs umbellate, terminating the short branches, mostly pubescent; follicle smooth, inflated, 2 - 4-seeded. — Var. FERRUGINEA, *Nutt.* Leaves smaller (1′ long), slightly lobed, covered, like the branches, corymbs, and follicles, with a dense brownish pubescence. — Banks of streams, Florida and Alabama (the variety) to the mountains of Georgia and Tennessee. April – May. — Shrub 3° – 5° high, the old bark separating in thin layers. Flowers white.

4. SPIRÆA, L. MEADOW-SWEET.

Calyx 5-cleft, persistent. Petals 5, roundish, imbricated in the bud. Stamens 10 – 50. Follicles 3 – 12, 1 – 10-seeded. Styles terminal. Seeds without albumen. — Shrubs or perennial herbs, with simple or compound leaves. Flowers white or rose-color, sometimes diœcious.

* *Shrubs: flowers perfect.*

+ *Flowers corymbose.*

1. **S. corymbosa,** Raf. Leaves undivided, ovate, unequally serrate near the tip, whitish beneath; corymb large, smooth, compound; flowers white; follicle smooth. — Mountains of North Carolina and Georgia. June. — Shrub 1° - 2° high. Leaves 2′ – 3′ long.

+ + *Flowers panicled.*

2. **S. tomentosa,** L. Leaves simple, ovate or oblong, serrate, the lower surface, like the branches and close panicle, covered with a dense, rust-colored pubescence; follicles 5, not inflated, tomentose, several-seeded. — Low grounds in the upper districts. June – July. — Stem 2° – 3° high. Flowers small, pale purple.

3. **S. salicifolia,** L. Smooth; panicle dense-flowered; leaves varying from lanceolate to oblong-obovate, sharply and doubly serrate; follicles not inflated, smooth, several-seeded. — With the preceding. June – July. — Stem 2° – 5° high. Flowers white.

* * *Perennial herbs: leaves lobed or compound.*

4. **S. lobata,** Murr. Flowers perfect, in long-peduncled paniculate cymes; leaves coarse, pinnately lobed, the terminal lobe very large, reniform, 7 – 9-parted, with the divisions incisely toothed and serrate; stipules reniform, persistent; follicles 6 – 8, 1 – 2-seeded. — Swamps along the mountains of Georgia and North Carolina. June – July. — Stem smooth, 5° – 8° high Upper leaves 3-lobed and sessile; the lowest ones on long petioles. Flowers rose-color. Petals and sepals often in fours.

5. **S. Aruncus,** L. Flowers diœcious, in elongated filiform panicled racemes; leaves thrice-pinnate; leaflets thin, lanceolate-oblong, sharply and

doubly serrate; stipules minute or wanting; follicles 3 – 5, several-seeded, reflexed. — Woods on the mountains of Georgia and North Carolina. June. — Stem tall and slender. Flowers minute, white.

5. NEVIUSIA, Gray.

Calyx bractless, spreading, 5-parted, with the lobes leaf-like, incisely serrate and persistent. Corolla none. Stamens indefinite, inserted in several rows on the thin disk which lines the bottom of the calyx; filaments filiform. Ovaries 2 – 4, sessile; style nearly terminal, filiform. Ovule single, pendulous, anatropous. Achenia drupaceous. Cotyledons oval, flat. Embryo included in thin fleshy albumen. Radicle superior, inflexed-accumbent. — A shrub, with alternate leaves, free bristle-awl-shaped stipules, and single or clustered terminal flowers on slender peduncles.

1. **N. Alabamensis,** Gray. — Shady cliffs near Tuscaloosa, Alabama (*Rev. R. D. Nevius*). — Shrub 2° – 5° high, with spreading branches. Leaves short-petioled, membranaceous, ovate or oblong, doubly serrate, 1′ – 2½′ long. Flowers very numerous and showy.

6. GILLENIA, Mœnch. Indian Physic.

Calyx tubular-campanulate, 5-toothed. Petals 5, linear-lanceolate, unequal, inserted on the throat of the calyx, convolute in the bud. Stamens 10 – 20. Follicles 5, included in the calyx, 2 – 4-seeded. — Perennial herbs. Leaves thin, trifoliolate; the leaflets sharply and doubly serrate. Flowers white or rose-color, in loose few-flowered corymbs.

1. **G. trifoliata,** Mœnch. Stipules small, subulate, entire; leaflets oblong, acuminate, rather coarsely serrate; lower peduncles elongated, flowers white. — Rich woods in the upper districts. June. — Stem 2° – 3° high.

2. **G. stipulacea,** Nutt. Stipules leafy, ovate, serrate; leaflets lanceolate, coarsely serrate, or the lowest incisely lobed; flowers rose-color. — With the preceding. June. — Stem 2° – 3° high.

7. AGRIMONIA, Tourn. Agrimony.

Calyx 5-cleft, the tube top-shaped, contracted at the throat, and armed with hooked bristles. Petals 5. Stamens 5 – 15, inserted on the throat of the calyx. Achenia 2, included in the grooved and indurated calyx-tube. — Perennial herbs, with unequally pinnate leaves, leafy toothed stipules, and small yellow flowers in long spiked racemes. Fruit nodding.

1. **A. Eupatoria,** L. Stem hirsute, 2° – 3° high; leaflets 3 – 5, 2′ – 3′ long, oblong or obovate, coarsely and broadly mucronate-serrate, pubescent beneath; racemes mostly 3, 1° or more long, rarely numerous and smaller. — Dry open woods. August.

Var. **mollis,** Torr. & Gray. Softly pubescent; leaflets 7 – 9, lanceolate, paler beneath, 1½′ long. — Rocky woods in the upper districts. August.

2. **A. parviflora,** Ait. Stem 3° – 5° high, densely hirsute, branching above; leaflets 9 – 15, lanceolate, sharply serrate, 1½′ – 2′ long, the smaller ones numerous; fruiting calyx larger than the preceding. Swamps, chiefly in the upper districts. August.

3. **A. incisa,** Torr. & Gray. Stem, petioles, and lower surface of the leaves clothed with soft down and long hairs intermixed; leaflets 7 – 9, small (1′ long), oblong or obovate, coarsely serrate, with smaller ones between; stamens 5. — Dry open woods, in the lower districts, Georgia, and westward. August. — Stem 2° high. Flowers small.

8. POTERIUM, L.

Calyx 4-parted, the tube 4-angled. Petals none. Stamens 4, the filaments usually thickened upward. Style terminal, slender. Stigma pencil form. Achenia 1 – 2, included in the 4-winged indurated calyx tube. — Herbs, with unequally pinnate leaves. Flowers in close heads or spikes.

1. **P. Canadense,** Benth. & Hook. Smooth; leaflets numerous, stalked, cordate-ovate or oblong, serrate; spikes long-peduncled, cylindrical, elongated in fruit; stamens flattened. — Wet meadows, along the mountains. Sept. ♃ — Stem 2° – 4° high. Lowest leaves on long petioles. Flowers white.

9. ALCHEMILLA, Tourn.

Calyx 4 – 5-parted, and with as many alternate bracts; the tube obconical, contracted at the throat. Petals none. Stamens 1 – 4. Style lateral. Stigma capitate. Achenia 1 – 4, included in the persistent calyx-tube. — Small herbs, with palmately divided leaves, and minute greenish flowers in corymbs or clusters.

1. **A. arvensis,** L. Annual, hairy; stem (1′ – 8′ high) leafy; leaves 3-parted, the divisions wedge-shaped, 3 – 5-lobed; flowers in axillary sessile clusters; fertile stamens 1 – 2. — Waste places, North Carolina. Introduced. — Stem branching from the base. Leaves 4″ – 6″ long.

10. GEUM, L. AVENS.

Calyx campanulate, deeply 5-cleft, and usually with as many bracts at the sinuses. Petals 5. Stamens and achenia numerous, the latter crowded on the conical or cylindrical dry receptacle. Styles terminal, long, persistent, jointed and hairy, or straight and smoothish. Seeds erect. — Perennial herbs, with pinnately divided leaves. Flowers yellow, white, or purple.

1. **G. vernum,** Torr. & Gray. Stems ascending, hairy, 6′ – 12′ high; lowest leaves pinnate or round-cordate, the upper 3 – 5-foliate; flowers few and small; petals yellow, as long as the calyx; head of achenia globose, raised on a slender stipe; receptacle glabrous. — Woods and copses, Tennessee. March – April.

2. **G. Virginianum,** L. Stem stouter, hirsute; stem leaves 3-parted, petals shorter than the calyx; heads of fruit larger, on stouter peduncles; receptacle smooth; otherwise like the next. — Wet woods, North Carolina (*Hyama*).

3. **G. album,** Gmelin. Smoothish or downy; stem slender, with spreading branches; radical leaves pinnate, or the earliest ones nearly simple and rounded; stem-leaves 3-parted, lobed or toothed; petals white, as long as the

calyx; style jointed and bent near the middle, the smooth lower portion persistent and hooked; receptacle and ovaries bristly-hairy. — Rich woods in the upper districts. April – May. — Stem 2° high.

4. **G. geniculatum,** Michx. Hairy; leaves pinnate, 3-parted or 3-lobed, the upper ones nearly sessile; leaflets or lobes thin, ovate and obovate, toothed and serrate; style jointed and bent in the middle, the upper portion plumose and nearly persistent, the lower pubescent, or smooth above; heads of the hairy achenia sessile. — High mountains of North Carolina. July. — Stem 2° – 3° high. Flowers white, veiny.

5. **G. radiatum,** Michx. Hirsute; stem short (6′ – 12′), often branching; lowest leaves pinnate, the terminal leaflet large, reniform, obscurely lobed, doubly toothed, the lateral ones few and small; stem-leaves scattered, small, sharply toothed, sessile; flowers large; petals obcordate, yellow; style straight and wholly persistent, hairy at the base; heads of achenia sessile. — Highest mountains of North Carolina. July. — Flowers 1′ wide.

11. WALDSTEINIA, Willd.

Calyx obconical, 5-cleft, with as many alternate bracts. Petals 5. Stamens numerous, inserted into the throat of the calyx. Achenia 2 – 6, dry or somewhat fleshy. Style terminal, filiform, separating from the achenium by a joint. Seeds erect. — Low perennial herbs, with chiefly radical and roundish lobed leaves, and yellow flowers on scape-like stems.

1. **W. fragarioides,** Tratt. Smooth or hairy; leaves long-petioled, trifoliolate or 3-parted, with broadly cuneate and crenately toothed leaflets; scape as long as the leaves, bracted, many-flowered; achenia 4 – 6, minutely hairy. — Mountain woods. May – June. — Stem and leaves 4′ – 6′ high. Petals larger than the calyx.

2. **W. lobata,** Torr. & Gray. Hairy; leaves cordate, crenately 3 – 5-lobed; scape filiform, bracted, 4 – 8-flowered; achenia mostly 2, hoary; petals rather shorter than the calyx. — Banks of the Flint and Chattahoochee Rivers, in the middle districts of Georgia, very rare. May – June. — Scape and leaves 4′ – 8′ high.

12. POTENTILLA, L. CINQUEFOIL.

Calyx flat, 5-cleft, with as many bracts. Petals 5, obcordate or roundish. Stamens numerous. Style lateral or terminal, deciduous. Achenia collected in a head on the dry and pubescent receptacle. — Herbs or shrubby plants, with variously divided leaves. Flowers solitary or cymose.

* *Style terminal, or nearly so.*

1. **P. Norvegica,** L. Annual, hairy; stem erect, branched; leaves palmately 3-foliolate, the leaflets obovate oblong or lanceolate, coarsely serrate; flowers pale yellow, in leafy cymes; petals shorter than the calyx. — Waste places. Introduced, and sparingly naturalized. — Stem 1° – 2° high.

2. **P. Canadensis,** L. Perennial, hairy; stem prostrate or ascending, simple; leaves palmately 5-foliolate; leaflets obovate-oblong, coarsely serrate; flowers axillary, solitary, on long filiform peduncles; petals yellow, obcordate,

as long as the calyx. (P. simplex, *Michx.*) — Meadows in the upper districts, July – August. — Stem 1° – 3° long.

Var. **pumila,** Torr. & Gray. Cæspitose, villous; stems peduncle-like, 2′ – 3′ high, 1 – 3-flowered, mostly shorter than the leaves; leaflets small, obovate. — Dry woods in the upper districts.

3. **P. supina,** L. Annual, pubescent; stems prostrate; leaves pinnate; leaflets 7 – 9, oblong-obovate, coarsely serrate; peduncles axillary, solitary; petals obovate, yellow, as long as the calyx; achenia with a starchy appendage at the base. — Banks of the Mississippi, Tennessee. August.

* * *Style lateral.*

4. **P. tridentata,** Ait. Stem somewhat shrubby at the base, erect or ascending, pubescent; leaves rigid, trifoliolate, cuneate-oblong, 3-toothed at the apex; flowers white, in a terminal cyme. — High mountains of North Carolina. July. — Stem 5′ – 10′ high. Achenia and receptacle very hairy.

13. FRAGARIA, Tourn. STRAWBERRY.

Flowers like Potentilla, but the dry achenia borne on the enlarged, at length pulpy and scarlet receptacle. Style lateral. — Perennial herbs with creeping runners. Leaves radical, trifoliolate. Flowers white, in terminal cymes.

1. **F. Virginiana,** Ehrhart. Appressed-hairy; leaflets thick, oblong, coarsely serrate; scape few-flowered; fruit roundish, the achenia embedded in the deeply pitted receptacle. — Rich woods. March – April. — Scapes 4′ – 6′ high.

2. **F. vesca,** L. Softly villous, 3′ – 6′ high; leaflets thin, oblong-oval, pale beneath, 1′ long; pedicels recurved in fruit; calyx spreading; achenia fixed to the surface of the receptacle. — Tennessee (*Gattinger*). April.

3. **F. Indica,** Andr. (STRAWBERRY GERANIUM.) Creeping; leaves trifoliolate or 3 lobed, the lobes round-obovate, crenate; peduncles 1-flowered; calyx leafy-bracted; petals yellow; fruit inedible. — Waste places, escaped from cultivation.

14. RUBUS, L. BRIER, BRAMBLE.

Calyx concave or flattish, 5-parted, without bracts. Petals 5, deciduous. Stamens numerous. Achenia juicy, crowded on the conical or cylindrical receptacle. Style nearly terminal, deciduous. — Perennial or shrubby and mostly prickly plants, with lobed or compound petioled leaves, and white or reddish flowers.

* *Heads of achenia hemispherical, deciduous: receptacle dry.*

1. **R. odoratus,** L. Shrubby, not prickly; the branches, petioles, and corymbs hispid with glandular hairs; leaves large, broadly ovate, 3-lobed, or the lowest ones 5-lobed, the lobes acute or acuminate, toothed and serrate; calyx-lobes caudate; flowers large, rose-color; fruit reddish. — Rocky woods on the mountains of Georgia and Carolina. June – August. — Stem 3° – 4° high. Flowers 2′ in diameter.

2. **R. occidentalis,** L. Glaucous; stem prickly, but otherwise very smooth, bending; leaves 3 – 5-foliolate; leaflets thin, ovate, acuminate, coarsely serrate or sparingly toothed, white-downy beneath; petals white, shorter than the reflexed short-caudate hoary calyx lobes; fruit black — Borders of woods along the mountains. May. — Stem biennial, 5° – 8° long.

* * *Heads of achenia oval or oblong, persistent: receptacle juicy.*

3. **R. villosus,** Ait. Tall, shrubby; stem erect or bending, armed, like the petioles and peduncles, with stout recurved prickles, the branches and 3 – 7-foliolate leaves soft-hairy or nearly smooth; leaflets ovate or oblong, doubly serrate; racemes leafy below, bracted above; sepals acuminate, much shorter than the obovate white petals; fruit large, oblong, black. — Swampy thickets, common. April. — Stem 4° – 10° high.

4. **R. cuneifolius,** Pursh. Shrubby, armed with stout prickles; stem erect; branches and leaves tomentose; leaves trifoliolate, with the leaflets cuneate-obovate, unequally serrate towards the summit, tomentose and white beneath; racemes few-flowered; petals white; fruit ovoid, black. — Old fields. April. — Stem 2° – 4° high. Leaves and fruit smaller than in the preceding.

5. **R. trivialis,** Michx. Shrubby, and armed with stout straight or recurved prickles and bristly hairs; stem prostrate, slender; leaves 3 – 5-foliolate, partly persistent; leaflets smooth, oblong-ovate or obovate, acute, sharply serrate; racemes few-flowered, leafy below, mostly longer than the leaves; flowers large, white; fruit black. — Dry sandy soil. April.

6. **R. Canadensis,** L. Stem shrubby at the base, slender, trailing, the prickles few and scattered; leaves mostly 3-foliolate; leaflets smooth, thin, oval or oblong, coarsely and unequally serrate; racemes few-flowered, leafy; fruit large, roundish, black. — Dry sterile soil, North Carolina and Tennessee. May.

7. **R. hispidus,** L. Somewhat shrubby, and armed with weak bristle-like prickles; stem slender, prostrate; leaves trifoliolate, persistent; leaflets obovate, obtuse, coarsely serrate, smooth; racemes many-flowered, slender, longer than the leaves; flowers small, white; fruit of few large and black achenia. (R. obovalis, *Michx.*) — Cold shady swamps among the mountains. May – June. — Fruit sour.

15. ROSA, Tourn. Rose.

Calyx 5-cleft, the urn-shaped tube becoming fleshy in fruit. Petals 5. Stamens numerous, inserted with the petals on the throat of the calyx. Ovaries numerous, hairy, inserted on the thin receptacle that lines the inner surface of the calyx-tube. Styles nearly included. Achenia bony. — Prickly shrubs. Leaves unequally pinnate. Stipules united with the petioles. Flowers showy.

* *Styles cohering, exserted.*

1. **R. setigera,** Michx. Stem long, reclining, smooth; leaflets 3 – 5, ovate, acuminate or acute, serrate, shining above; petioles, peduncles, and calyx glandular; corymb few-flowered; petals obcordate; fruit globose, smooth. — Borders of swamps, chiefly in the upper districts. June. — Stem 10° – 15° long. Flowers 2′ – 3′ wide, red.

* * *Styles distinct, included: flowers red or white.*

2. **R. Carolina,** L. Stem erect, smooth, armed with stout recurved stipular prickles; leaflets 5 – 9, oblong or elliptical, acute, finely serrate, dull and smoothish above, the lower surface paler, or, like the prickly petioles and caudate calyx lobes, tomentose; flowers single or corymbose; calyx tube and peduncles glandular-hispid. — Swamps. June. — Stem 4° – 6° high, commonly purplish. Fruit depressed-globose, glandular.

3. **R. humilis,** Marsh. Stem low, erect, armed with bristles and stout stipular prickles; leaflets mostly 5, elliptical or oblong-lanceolate, sharply serrate, smooth and shining above, paler and often somewhat pubescent beneath; flowers solitary, or 2 – 3 together; peduncles and calyx glandular, the latter with foliaceous, often incised lobes. (R. parviflora, *Ell.*) — Mostly in dry soil, common. May – June. — Stem 1° – 3° high. A variable species. Stem sometimes spineless.

4. **R. rubiginosa,** L. (EGLANTINE.) Stem erect or curving, armed with very stout prickles; leaflets 5 – 7, oval or obovate, serrate, glandular beneath; flowers mostly solitary, on hispid peduncles; fruit obovate. (R. suaveolens, *Pursh.*) — Waste places. Introduced. Branches yellowish green. Leaves fragrant.

6. **R. lævigata,** Michx. (CHEROKEE ROSE.) Stem long, trailing, smooth, the branches armed with very stout and curved prickles, leaves evergreen, mostly trifoliolate; leaflets smooth and shining, lanceolate, the midrib hispid; stipules deciduous; flowers large, solitary, white; calyx very bristly. — Common in cultivation.

16. CRATÆGUS, L. HAWTHORN.

Calyx urn-shaped; the limb 5-cleft, persistent. Petals 5, orbicular, concave. Stamens few or many. Styles 1 – 5, distinct. Fruit fleshy, containing 1 – 5 bony nutlets. — Thorny shrubs or trees. Leaves simple, serrate or variously lobed. Flowers white, axillary and solitary, or in corymbs terminating short lateral branches. Stipules on the young branches linear, or lunate and serrate.

* *Corymbs compound, many-flowered.*

+ *Fruit small, not larger than a pea.*

1. **C. spathulata,** Michx. Young branches tomentose, otherwise nearly smooth and glandless throughout; leaves small, spatulate, crenate at the summit; those on the young shoots larger and incisely lobed; calyx lobes very short; styles 5; fruit very small, red. — River banks, April. — A small tree. Corymbs sometimes slightly pubescent. Stipules lunate on the young branches.

2. **C. apiifolia,** Michx. Young branches, leaves, and corymbs whitened with soft hairs; leaves small, deltoid, pinnately 5 – 7-lobed, sharply toothed, nearly smooth when old, truncate or cordate at the base; styles 1 – 3, filiform; fruit globular, red. — River swamps. March – April. — A small tree. Leaves ½′ – 1′ long.

3. **C. cordata,** Ait. Young branches, leaves, and corymbs softly pubescent, soon smoothish; leaves deltoid-ovate, truncate or cordate at the base,

long-petioled, 3 – 5-lobed and serrate; spines slender; fruit globose, red. — River banks in the upper districts. May – June. — A small tree. Leaves 1′ – 3′ long. Styles 5.

4. **C. arborescens,** Ell. Smooth; leaves thin, oval or elliptical, acute at both ends, finely serrate, sometimes toothed or lobed near the apex, on slender nearly glandless petioles; corymbs very numerous; styles 5; fruit ovoid, red. — Low ground, Georgia, and westward. March – April. — A small tree, with ash-colored branches. Spines stout or wanting. Leaves 1′ – 2′ long, entire at the base, sometimes hairy in the axils of the veins beneath.

+ + *Fruit large, ½′ – ¾′ long (except No. 7, var.); leaves, etc. mostly glandular.*

5. **C. Crus-galli,** L. Leaves thick, oblong-obovate, smooth, shining above, finely serrate from near the glandless base; those on the young branches sometimes slightly lobed; spines long and stout, or sometimes wanting; corymbs smooth or nearly so; styles 1 – 3; fruit pear-shaped or globose, red. — Woods. April – May. — A shrub or small tree.

6. **C. coccinea,** L. Smooth; leaves thin, roundish-ovate, with 3 – 5 short and sharply serrate lobes on each side, abruptly narrowed into the slender petiole, strongly straight-veined; those on the young branches often truncate or slightly cordate at the base, and more strongly lobed; spines stout; styles 3 - 5; fruit large, globose or pear-shaped, bright red. (C. viridis, *L.* C. populifolia, *Ell.*) — Open dry woods. April – May. — A shrub or small tree. Leaves 1′ – 2′ long, bright green,

7. **C. tomentosa,** L. Leaves large (3′ – 5′ long), broadly ovate or oval, finely serrate, and slightly lobed above the middle, abruptly narrowed into a short margined petiole, pubescent, especially beneath, the veins straight and impressed; corymbs large, tomentose; styles 1 – 3; fruit pear-shaped, orange-red. — Chiefly northern.

Var. **microcarpa.** Leaves broadly ovate, membranaceous, slightly toothed or entire, pubescent beneath, slender-petioled, 3′ – 6′ long; flowers ½′ wide; fruit globose, red, 3″ wide; styles mostly 2. — River banks near Rome, Georgia. April. — A small tree.

8. **C. subvillosa,** Schrader. Leaves thick, ovate or roundish, sharply serrate, from the base, toothed above the middle, softly pubescent beneath, like the branchlets and corymbs; flowers ¾′ wide; fruit globose, "bright scarlet, 1′ in diameter." — Rich soil, Tennessee. April. — A shrub or small tree.

9. **C. triflora,** Chapm. Leaves thin, 1½′ – 3′ long, ovate, rounded at the base, or abruptly contracted into a short petiole, glandular-serrate, soon smooth above, softly pubescent, like the branchlets and corymbs, beneath; corymbs 1 – 3-(mostly 3-)flowered, the lateral pedicels longer; flowers ¾′ wide; calyx lobes lanceolate, thickly glandular-ciliate, twice as long as the tube; styles mostly 4. — Cliffs of the Coosa River, Georgia. April. — A large shrub.

10. **C. punctata,** Jacq. Leaves rather rigid, 2′ – 3′ long, wedge-obovate, tapering and entire below the middle, finely toothed and serrate above, pubescent, at length glabrate, strongly impressed-veined; corymbs villous;

styles mostly 3; fruit dull red, globose, ½′ wide, dotted. — Near watercourses in the upper districts. April – May.

11. **C. collina,** Chapm. Branchlets, leaves, and corymbs appressed-pubescent, soon glabrous; leaves ¾′ – 2′ long, obovate, acute, finely but obtusely serrate, tapering into a short petiole; flowers ⅘′ wide; calyx lobes lanceolate, glandular, longer than the tube; styles 5; fruit globular, ½′ in diameter. — Rocky hillsides, North Georgia and Tennessee. April. — A small tree.

* * *Corymbs simple, 1 – 6-flowered.*

12. **C. æstivalis,** Torr. & Gray. Glandless; leaves rigid, pubescent, becoming smooth above, and rusty-pubescent on the veins beneath, cuneate-obovate, crenate above the middle, tapering into a short petiole; corymbs smooth, 3 – 5-flowered; styles 4 – 5; fruit large, globose, red. — Varies (C. lucida, *Ell.*) with smaller (1′), thinner, and smooth leaves, which are glossy above. — Margins of pine barren ponds, Florida to South Carolina, and westward. March – April. — A small tree. Leaves 2′ – 3′ long. Fruit juicy, edible.

13. **C. flava,** Ait. Glandular; leaves cuneate-obovate, serrate and slightly lobed near the apex, smooth, tapering into a short petiole; corymbs smooth, 1 – 4-flowered; styles 4 – 5; flowers and pear-shaped fruit large. — Shady sandy places, Florida to North Corolina, and westward. May. — Tree 15° – 20° high. Leaves 2′ – 3′ long. Fruit greenish yellow.

14. **C. glandulosa,** Michx. Branchlets, leaves and corymbs whitened with soft hairs; leaves opaque, cuneate, entire or glandular-serrate, tapering into a slender petiole, becoming smoothish; those on the young branches often sparingly lobed; corymbs 3 – 6-flowered, unilateral; styles 5; fruit small, globose, red. — Dry pine barrens, Florida to South Carolina, and westward. April. — A small tree, with coarse bark, and long recurved branches. Leaves 1′ long. Fruit 3″ – 4″ long.

15. **C. parvifolia,** Ait. Leaves obovate, scarcely petioled, serrate, the lower surface, like the branchlets and calyx, pubescent; spines numerous, long and slender; flowers mostly solitary; calyx lobes large, serrate; styles 5; fruit large, globose or pear-shaped, somewhat hairy. — Sandy soil. April – May. — A much branched shrub, 3° – 5° high. Leaves 1′ long.

17. PYRUS, L. Pear, Apple.

Calyx urn-shaped, 5-cleft. Petals 5. Stamens numerous. Styles 2 – 5. Fruit fleshy or baccate, containing 2 – 5 cartilaginous 2-seeded carpels. — Trees or shrubs. Flowers cymose or corymbose.

* *Leaves simple, glandular: fruit depressed at the base.*

1. **P. coronaria,** L. Leaves on long and slender petioles, ovate, rounded, or slightly cordate at the base, angled or lobed, serrate, smooth; corymbs simple, few-flowered; flowers rose-color, very fragrant; styles woolly and united at the base. — Rich soil in the upper districts. April. — A small tree. Leaves 2′ – 3′ long.

2. **P. angustifolia,** Ait. Leaves lanceolate or oblong, acute at the base, serrate, short-petioled; corymbs simple, few-flowered; flowers rose-color, very fragrant; styles smooth, distinct. — Open woods, chiefly in the upper districts. April. — A small tree. Fruit very sour.

* * *Leaves simple, the midrib glandular above: fruit baccate, globose.*

3. **P. arbutifolia,** L. Leaves oval-oblong or somewhat obovate, abruptly acute or mucronate, smooth above, except the midrib, finely serrate; styles villous at the base.

Var. **erythrocarpa.** Stem tall (5° – 10°); branchlets, cymes, and lower surface of the large (2′ – 4′) leaves tomentose and hoary; petals and anthers reddish; berries red.

Var. **melanocarpa.** Stem low (2° – 4°); branchlets, cymes, and leaves smooth or nearly so; leaves small; petals white; berries black. (Aronia melanocarpa, *Ell.*) — Swamps. March – April.

* * * *Leaves unequally pinnate: cymes compound: fruit baccate.*

4. **P. Americana,** DC. Leaflets 13 – 15, lanceolate, acuminate, serrate above the middle, soon smooth; cymes large, dense; berry small, globose or pear-shaped, scarlet. — Highest mountains of North Carolina. May – June. — A shrub or small tree. Fruit acid.

18. AMELANCHIER, Medic.

Calyx 5-cleft. Petals 5, oblong. Stamens numerous short. Styles 5, more or less united. Fruit baccate, containing 3 – 5 cartilaginous 2-seeded carpels; seeds separated by a false partition. — Shrubs or small trees, with simple leaves, and white flowers in terminal racemes.

1. **A. Canadensis,** L., var. **Botryapium,** Torr. & Gray. Branches, leaves, and racemes tomentose when young, soon smooth; leaves elliptical, abruptly acute, finely and sharply serrate, often slightly cordate; racemes slender, appearing before the leaves; petals four times as long as the calyx; fruit globose, purplish. — Woods. Feb. – March. — A small tree, with smooth whitish bark.

Var. **rotundifolia,** Torr. & Gray. Shrubby; leaves roundish oval, somewhat acuminate, sharply serrate; racemes 6 – 10-flowered; petals small, narrowly oblong. (Aronia, *Ell.*) — Low grounds, chiefly in the upper districts. March. — Shrub 2° – 3° high.

The cultivated representatives of this order are the PLUM (PRUNUS DOMESTICUS, *L.*), APRICOT (P. ARMENIACA, *L.*), CHERRIES (P. AVIUM and P. CERASUS, *L.*), PEACH (PERSICA VULGARIS, *Mill.*), APPLE (PYRUS MALUS, *L.*), PEAR (P. COMMUNIS, *L.*), QUINCE (CYDONIA VULGARIS, *Pers.*), and the ALMOND (AMYGDALUS).

ORDER 49. CALYCANTHACEÆ. (CAROLINA-ALLSPICE FAMILY.)

Shrubs, with opposite and entire leaves, without stipules or pellucid dots. - Sepals and petals numerous and alike, united below into an obconical fleshy cup, imbricated in the bud. Stamens numerous, short, inserted within the petals, the inner ones often sterile. Anthers adnate, extrorse. Ovaries several, enclosed in the calyx tube, and inserted on its inner face, becoming 1-seeded achenia in fruit. Seeds anatropous, without albumen. Cotyledons convolute.

1. CALYCANTHUS, L. SWEET-SCENTED SHRUB.

Calyx tube closed, leafy-bracted; the lobes and petals in several rows, lanceolate, somewhat fleshy. Stamens deciduous. Mature fruit dry, pear-shaped, enclosing the large achenia. — Aromatic shrubs, with opposite or forking branches, short-petioled deciduous leaves, and large brownish purple terminal flowers.

1. **C. floridus,** L. Branchlets, petioles, and peduncles hoary-pubescent; leaves oval or oblong, mostly acute or acuminate, very rough on the upper surface, tomentose and hoary beneath; sepals and petals linear-lanceolate, acute. — Banks of streams in the upper districts. April. — Shrub 4° - 8° high. Leaves 2′ - 3′ long. Flowers 1′ in diameter, very fragrant.

2. **C. lævigatus,** Willd. Branchlets, petioles, and peduncles pubescent or smoothish; leaves oblong or elliptical, mostly acute or acuminate, rough on the upper surface, paler and nearly smooth beneath; sepals and petals linear-lanceolate, acute. (C. inodorus, *Ell.*, leaves very rough above, but shining; flowers inodorous.) — Banks of streams, Florida, Georgia, and westward. April - May. — Shrub 4° - 8° high. Leaves 2′ - 3′ long. Flowers 1½′ in diameter.

3. **C. glaucus,** Willd. Branchlets, petioles, and peduncles smooth; leaves large, ovate or ovate-lanceolate, acuminate, green and roughish on the upper surface, smooth and glaucous beneath; flowers large, the sepals and petals lanceolate, and abruptly sharp-pointed. — Low shady woods along the mountains of Georgia and North Carolina. May - June. — Shrub 6° - 8° high. Leaves rather rigid, 4′ - 7′ long. Flowers 1½′ - 2′ in diameter.

The POMEGRANATE (PUNICA GRANATUM, *L.*) belongs to the allied order GRANATEÆ.

ORDER 50. SAXIFRAGACEÆ. (SAXIFRAGE FAMILY.)

Calyx of 4 - 5 more or less united sepals, free, or more or less adherent to the ovary, persistent. Petals as many as the sepals, rarely wanting. Stamens as many, or 2 - 4 times as many, inserted with the petals on the calyx. Ovaries 2 or sometimes 3-4, commonly united below, and separate at the summit. Seeds few-many. Embryo straight, in the axis of fleshy albumen.

Synopsis.

SUBORDER I. SAXIFRAGEÆ. Herbs. Petals imbricated in the bud. Stipules adnate to the petiole, or none.

* Stamens as many as the sepals.

1. **LEPUROPETALON.** Styles 3. Capsule 1-celled, beakless.
2. **HEUCHERA.** Styles 2. Capsule 1-celled, 2-beaked.
3. **BOYKINIA.** Styles 2. Capsule 2-celled, 2-beaked.

* * Stamens twice as many as the sepals.

+ Capsule 2-celled.

4. **SAXIFRAGA.** Flowers perfect. Stamens 10. Leaves entire or lobed.
5. **ASTILBE.** Flowers polygamous. Stamens 10. Leaves ternately compound.

+ + Capsule 1-celled.

6. **TIARELLA.** Stamens 10. Petals 5, entire.
7. **MITELLA.** Stamens 10. Petals 5, pinnatifid.
8. **CHRYSOSPLENIUM.** Stamens 8-10. Petals none.

SUBORDER II. ESCALLONIEÆ. Shrubs. Petals valvate in the bud. Stipules none. Leaves alternate.

9. **ITEA.** Stamens and petals 5. Flowers in a dense raceme.

SUBORDER III. HYDRANGIEÆ. Shrubs. Petals valvate or convolute in the bud. Leaves opposite. Stipules none.

10. **HYDRANGEA.** Petals valvate. Stamens 8-10. Styles distinct.
11. **DECUMARIA.** Petals valvate. Stamens 20 or more. Styles united.
12. **PHILADELPHUS.** Petals convolute. Stamens 20 or more. Styles 4. Capsule 4-valved.

SUBORDER IV. RIBESIEÆ. Shrubs. Leaves alternate, palmately veined or lobed. Stipules none. Fruit baccate.

13. **RIBES.** Flowers in axillary racemes. Stems mostly spiny.

1. LEPUROPETALON, Ell.

Calyx tube turbinate, cohering with the lower portion of the ovary, 5-parted. Petals 5, minute, spatulate. Stamens 5, very short. Styles 3. Capsule globular, 1-celled, with 3 parietal placentæ, many-seeded, loculicidally 3-valved at the apex. — A very small ($\frac{1}{2}'$ high) tufted annual herb, with alternate spatulate leaves, and solitary terminal white flowers.

1. **L. spathulatum,** Ell. — Close damp soil, Georgia (near Savannah) and South Carolina. March-April.

2. HEUCHERA, L. ALUM-ROOT.

Calyx campanulate, coherent with the base of the ovary, 5-cleft. Petals 5, spatulate. Stamens 5. Styles 2. Capsule 1-celled, with 2 parietal placentæ, many-seeded, 2-beaked, opening between the beaks. Seeds rough or hispid. — Perennial herbs, with erect scape like stems. Leaves chiefly radical, long-petioled, roundish cordate, lobed or toothed. Stipules adnate to the petioles. Flowers small, panicled.

* *Calyx equal-sided.*

1. **H. Americana,** L. Scape leafless, glandular; leaves crenately or acutely 7 – 9-lobed and toothed, the teeth mucronate; panicles long, narrow, loosely flowered; calyx as long as the white petals, much shorter than the stamens and very slender styles. — Shady rocky places in the middle and upper districts. April – May. — Scape 2° – 3° high, sometimes with one or two leaves. Leaves 2′ – 4′ wide, on petioles 4′ – 12′ long.

2. **H. villosa,** Michx. Scape bracted or somewhat leafy, and, like the petioles and lower surface of the leaves, shaggy with long spreading rusty hairs; leaves sharply 5 – 7-lobed and toothed, panicle loose; flowers minute; petals white, very narrow, about as long as the stamens; styles elongated. — Mountains, Alabama to North Carolina. June – July. — Scape 1° – 3° high. Leaves 3′ – 8′ wide. Flowers about a line in length.

3. **H. Curtisii,** Gray. Scape and petioles smooth; leaves lightly lobed; branches of the panicle long, racemose, spreading; petals purple? spatulate lanceolate, scarcely longer than the calyx; stamens slightly pubescent. — Buncombe County, North Carolina (*Curtis*). — Flowers larger than the last.

4. **H. Rugelii,** Shuttlw. Glandular-hirsute, and somewhat viscid; scape slender (8′ – 15′ high), often leafy; panicle small (2′ – 5′ long), the slender pedicels nodding; petals linear-spatulate, twice as long as the calyx lobes; filaments exserted; leaves thin, orbicular-cordate (3′ – 6′ broad), shortly and broadly 7 – 9-lobed, with rounded mucronate teeth, pubescent on the nerves beneath; petioles filiform. — Shaded rocks on the mountains of Alabama and North Carolina (*Mohr, Rugel*).

* * *Calyx oblique.*

5. **H. pubescens,** Pursh. Glandular-puberulent; stem (2°) leafy; leaves round-cordate, acutely 5 – 7-lobed and toothed, with the sinus closed; stipules obtuse, fringed; flowers nodding; calyx ovoid, yellowish green, the ovate lobes obtuse; petals spatulate, white, and, like the smooth stamens and styles, included. — Mountains of North Carolina. June – July.

6. **H. hispida,** Pursh. Hirsute or minutely glandular-pubescent; leaves 5 – 9-lobed, the lobes short, rounded, and mucronately toothed; panicle contracted; the short branches few-flowered; petals broadly spatulate, purple, rather shorter than the more or less exserted stamens; styles at length much exserted. — High mountains of North Carolina. May – June. — Scape 2° – 3° high, sometimes smoothish, as well as the petioles. Flowers larger than any of the preceding.

3. BOYKINIA, Nutt.

Calyx turbinate, coherent with the ovary, 5-cleft. Petals deciduous. Stamens 5, short. Styles 2 – 3. Capsule 2 – 3-celled, with a central many-seeded placenta, 2-beaked, opening between the beaks. Seeds smooth. — Erect leafy perennial herbs, with alternate round-cordate palmately lobed and toothed leaves, and small flowers in corymbose cymes.

1. **B. aconitifolia,** Nutt. Glandular-hairy, or the upper surface of the long-petioled 5 – 7-lobed leaves smoothish; cymes fastigiate, clammy; flowers secund, white; teeth of the calyx triangular-ovate. — Mountains, Alabama to North Carolina. June – July. — Stem 1° – 2° high.

4. SAXIFRAGA, L. Saxifrage.

Calyx free, or cohering with the base of the ovary, deeply 5-cleft. Petals 5, commonly deciduous. Stamens 10. Styles 2. Capsule 2-celled, 2-beaked, opening between the beaks. Seeds numerous, smooth. — Lowest leaves clustered.

* *Stems leafy.*

1. **S. leucanthemifolia,** Michx. Hairy and clammy; leaves spatulate, coarsely toothed, tapering into a long winged petiole; the upper ones linear; panicle diffuse; petals clawed, unequal, white, the 3 larger ones spotted with yellow. — Mountains of North Carolina. July. — Stem 10′ - 20′ high.

* * *Stems naked, scape-like.*

2. **S. erosa,** Pursh. Leaves oblong, tapering to the base, sharply toothed; scape clammy-pubescent; panicle long, slender, loosely flowered; sepals reflexed, nearly as long as the oval white petals; stigmas sessile. — Shady banks of streams on the mountains of North Carolina. July. — Scape 1° - 3° high. Leaves 8′ - 12′ long.

3. **S. Virginiensis,** Michx. Pubescent; leaves somewhat fleshy, obovate, crenately toothed; scape clammy; panicle cymose, dense-flowered; sepals erect, not half as long as the oblong obtuse white petals; styles short. — Rocks on the mountains of Georgia and Carolina. April - May. — Scape 4′ - 12′ high.

4. **S. Careyana,** Gray. Smooth or pubescent; leaves broadly ovate, crenately or sharply toothed, abruptly contracted into a slender petiole; scape slender; panicle loosely flowered; sepals spreading, half as long as the lanceolate-oblong, white, faintly spotted petals; filaments filiform. — Moist shady rocks, on the high mountains of North Carolina. June. — Plant 6′ high.

5. **S. Caroliniana,** Gray. Glandular-pubescent; leaves all radical, deltoid or ovate, coarsely toothed, abruptly contracted into a margined petiole; bracts of the scape few; panicle diffuse; petals ovate, white, with 2 pale spots below the middle, twice the length of the reflexed sepals; filaments club-shaped; carpels turgid, free from the calyx, at length widely spreading. — Damp shady places on the mountains of North Carolina. May - June. — Scape 6′ - 12′ high.

5. ASTILBE, Hamilton.

Flowers polygamo-diœcious. Calyx campanulate, 5-parted, nearly free from the ovary. Petals 5, spatulate, withering-persistent. Stamens 10, exserted, Styles 2. Capsule 2-celled, few-seeded. Seed-coat loose and thin. — Perennial herbs, with ternately compound leaves, and small yellowish white flowers, in panicled racemes.

1. **A. decandra,** Don. Stem 3° - 5° high; leaves twice or thrice ternately compound; the leaflets mostly cordate-ovate, sharply lobed and toothed Stigmas of the sterile flowers and the stamens and petals of the fertile ones smaller or rudimentary. — Banks of streams among the mountains of Georgia and North Carolina. June - August.

6. TIARELLA, L. False Mitre-wort.

Calyx campanulate, nearly free from the ovary, 5-parted. Petals 5, entire. Stamens 10. Styles 2. Capsule membranaceous, 2-valved, the valves very unequal, 1-celled, few-seeded. Seeds globular, smooth. — Perennial herbs, with scape-like stems, chiefly radical and petioled leaves, and small racemose flowers.

1. **T. cordifolia,** L. Leaves round-cordate, crenately or acutely lobed and toothed, hairy above, pubescent beneath, on long hairy petioles; scape (6′ – 12′ high), naked, or bearing 1 – 2 alternate leaves above the middle; racemes simple or branched, many-flowered; petals oblong, white or purplish. — Rocky woods and banks along the mountains. April – May.

7. MITELLA, Tourn. Mitre-wort.

Calyx coherent with the base of the ovary, 5-cleft. Petals 5, pinnatifid. Stamens 10. Styles 2. Capsule 2-beaked, 1-celled, 2-valved at the apex, many-seeded. Seeds smooth, borne on two parietal placentæ. — Perennial herbs, with broadly cordate and lobed leaves, and small flowers in a terminal raceme.

1. **M. diphylla,** L. Hairy; radical leaves cordate, acute, coarsely serrate and slightly 3-lobed, on long petioles; stem leaves 2, opposite, sessile; raceme slender, loosely many-flowered. — Shady woods, on the mountains of North Carolina. May. — Stem 6′ – 12′ high. Flowers white.

8. CHRYSOSPLENIUM, Tourn. Golden Saxifrage.

Calyx tube coherent with the ovary, 4 – 5-lobed; the lobes obtuse and yellow within. Petals none. Stamens 8 – 10, very short, inserted on a conspicuous disk. Styles 2. Capsule very short, 2-lobed, 1-celled, with 2 parietal placentæ, 2-valved at the apex, many-seeded. — Smooth succulent herbs, with roundish leaves, and solitary greenish flowers.

1. **C. Americanum,** Schweinitz. Stems prostrate, forking; leaves mostly opposite, roundish, slightly lobed; flowers in the forks of the stem. — Cold and shady banks of streams, on the mountains. April – May. ♃ — Stems 4′ – 6′ long.

9. ITEA, L.

Calyx campanulate, 5-cleft, free from the ovary. Petals 5, lanceolate. Stamens 5, shorter than the petals. Styles 2, united. Capsule 2-celled, 2-furrowed, septicidally 2-valved, several-seeded. — A slender branching shrub, with simple oblong or oval serrate pubescent leaves, and long mostly drooping racemes of white fragrant flowers terminating the branches.

1. **I. Virginica,** L. — Swamps and wet banks. May – June. — Shrub 4° – 10° high. Leaves 1½′ – 3′ long.

10. HYDRANGEA, Gronov.

Calyx tube hemispherical, 8 – 10-ribbed, coherent with the ovary; the limb 4 – 5-toothed, persistent. Petals ovate, valvate in the bud. Stamens 8 – 10, filiform. Capsule crowned with the two diverging styles, 2-celled, many-seeded, opening at the apex between the styles. — Erect shrubs, with opposite petioled leaves, without stipules, and whitish or purplish flowers, in ample compound cymes; the marginal flowers mostly sterile, with the calyx lobes enlarged and showy.

1. **H. arborescens,** L. Smoothish; leaves ovate, acute or acuminate, serrate, mostly rounded or cordate at the base; cymes crowded, flat-topped; sterile flowers few or none. — Banks of streams. June – July. — Shrub 4° – 8° high. Leaves 3′ – 6′ long.

2. **H. radiata,** Walt. Leaves ovate, acuminate, serrate, mostly cordate at the base, white-tomentose beneath; cymes flat-topped; sterile flowers few. — Rich soil on the mountains. May – June. — Shrub 4° – 8° high.

3. **H. quercifolia,** Bartram. Young branches and leaves densely tomentose; leaves oval, sharply 5-lobed, serrate; cymes clustered, forming a close oblong panicle; sterile flowers large, numerous. — Shady banks, Florida, Georgia, and westward. May – June. — Shrub 3° – 6° high. Leaves 4′ – 8′ long. Sterile flowers whitish, turning purple.

11. DECUMARIA, L.

Flowers all fertile. Calyx tube turbinate, coherent with the ovary, 7 – 10-toothed. Petals valvate in the bud, oblong. Stamens 21 – 30. Styles united, persistent. Stigma thick, 7 – 10-rayed. Capsule 10 – 15-ribbed, 7 – 10-celled, bursting at the sides; the thin partitions at length separating obliquely into numerous chaffy scales. Seeds numerous, suspended. — A smooth climbing shrub, with opposite ovate or oblong entire or serrate leaves, and numerous odorous white flowers in a compound terminal cyme.

1. **D. barbara,** L. — Banks of streams. May – June. — Leaves shining, sometimes pubescent. Capsule, with the persistent style and stigma, urn-shaped, pendulous.

12. PHILADELPHUS, L. SYRINGA.

Calyx tube turbinate, cohering with the ovary, the limb 4 – 5-parted, persistent. Petals 4 – 5, convolute in the bud. Stamens 20 – 40, shorter than the petals. Styles mostly 4, more or less united. Capsule mostly 4-celled, loculicidally 4-valved, many-seeded. — Shrubs with simple opposite 3 – 5-ribbed leaves, without stipules, and large white solitary or cymose flowers.

1. **P. grandiflorus,** Willd. Branches and leaves pubescent; leaves ovate or ovate-oblong, acuminate, sharply serrate; flowers solitary, or 2 or more in a terminal cyme; calyx lobes ovate, acuminate, much longer than the tube. — Banks of streams, chiefly in the upper districts. April – May. — Shrub 6° – 10° high, with long and slender branches.

2. **P. inodorus,** L. Smooth; leaves entire or nearly so, ovate or ovate-oblong, acute; calyx lobes ovate, acute, as long as the tube. — Upper districts of Alabama to South Carolina. May. — Flowers smaller than in the last.

3. **P. hirsutus,** Nutt. Hairy; leaves small, ovate, acute, sharply serrate; flowers 1 – 3 together, terminal, and on short lateral branches; calyx lobes ovate, as long as the tube. — Mountains, Alabama to North Carolina. — A small shrub. Leaves 1′ long. Flowers ½′ wide.

13. RIBES, L. CURRANT, GOOSEBERRY.

Calyx tube adherent to the ovary, the limb 5-lobed. Petals 5, small. Stamens 5. Ovary 1-celled, with 2 parietal placentæ. Styles more or less united. Fruit a 1-celled many-seeded berry. Seeds anatropous, with the minute embryo at the base of hard albumen. — Spiny or unarmed shrubs, with alternate palmately veined and lobed leaves, without stipules, and with axillary racemose or clustered flowers.

* *Stems spiny and commonly bristly: peduncles 1 – 3-flowered.*

1. **R. Cynosbati,** L. Leaves on slender petioles, slightly cordate, roundish, 3 – 5-lobed, pubescent; peduncles 2 – 3-flowered; stamens and single style not longer than the broad and short calyx tube; petals obovate; berry mostly prickly. — Mountains of North Carolina. July. — Stem smooth or bristly. Leaves 1′ – 2′ in diameter,

2. **R. rotundifolium,** Michx. Leaves small, smoothish, roundish, 3 – 5-lobed, often acute at the base, on slender petioles; Peduncles 1 – 2-flowered; stamens and 2-parted style longer than the narrow-cylindrical calyx tube; petals spatulate; berry small, smooth. — Mountains of North Carolina. — Shrub 3° – 4° high, often unarmed. Leaves ½′ – 1′ in diameter.

3. **R. gracile,** Michx. Axillary spine very short; leaves on slender petioles, pubescent on both sides, the lobes acute, incised, and acutely toothed; peduncles long, capillary, erect, 1 – 2-flowered; calyx smooth, tubular-campanulate. — Mountains of Tennessee.

* * *Stems without spines or bristles: racemes many-flowered.*

4. **R. prostratum,** L'Herit. Leaves long-petioled, deeply cordate, with about 5 spreading incised and serrate lobes, smooth; racemes erect; style 2-cleft; berry glandular-bristly. — Mountains of North Carolina. May – June. — Stems reclining. Racemes 3′ – 5′ long. Leaves 2′ – 3′ in diameter.

5. **R. resinosum,** Pursh. Plant clothed in every part with resinous glandular hairs; leaves roundish, 3 – 5-lobed; racemes erect; bracts linear, longer than the pedicels; calyx flattish; petals obtusely rhomboidal; fruit hirsute. — Mountains of North Carolina. April – May. (*)

ORDER 51. PARNASSIACEÆ. (PARNASSIA FAMILY.)

Perennial smooth herbs, with ovate or reniform chiefly radical and entire leaves, on long petioles, and large solitary flowers terminating the scape-like, 1-leaved stem. — Sepals 5, persistent. Petals 5, ovate or obovate, veiny, imbricated in the bud, deciduous. Fertile stamens 5, alternating with the petals: anthers introrse. Sterile ones in sets of 3 – 15 more or less united filaments, placed opposite each petal. Ovary 1-celled, with 3 – 4 parietal placentæ. Stigmas 3 – 4, sessile, placed over the placentæ. Capsule loculicidally 3 – 4-valved at the apex, many-seeded. Seeds anatropous, winged, without albumen. Embryo straight, cylindrical.

1. PARNASSIA, Tourn. GRASS OF PARNASSUS.

Characters same as the order.

1. **P. Caroliniana,** Michx. Leaves broadly ovate or cordate-ovate; cauline one near the base of the stem, clasping; petals oval, sessile, with impressed greenish veins; sterile stamens by threes, distinct almost to the base, 2–3 times as long as the recurved fertile ones. — Damp soil, Florida, and northward. Oct.–Nov. — Stem 12′–18′ high. Flowers 1′ wide.

2. **P. asarifolia,** Vent. Leaves reniform; cauline one near the middle of the stem, clasping; petals broadly ovate, short-clawed; sterile stamens by threes. — Mountains of Georgia and North Carolina. August–Sept. — Flowers larger than in No. 1.

ORDER 52. CRASSULACEÆ. (ORPINE FAMILY.)

Succulent herbs, with exstipulate leaves, and regular perfect and mostly cymose flowers. Sepals 3–20, more or less united at the base, persistent. Petals as many as the sepals, inserted on the base of the calyx, imbricated in the bud, rarely united, or wanting. Stamens as many, or twice as many, inserted with the petals. Ovaries as many as the sepals, separate, or united below. Carpels several-seeded, opening along the inner suture. Seeds anatropous. Embryo straight, in thin albumen.

Synopsis.

* Carpels separate, opening within.

1. SEDUM. Sepals and petals 4–5. Stamens 8 or 10. Carpels many-seeded.
2. TILLÆA. Sepals and petals 3–4. Stamens 3 or 4. Carpels 2-several-seeded.
3. BRYOPHYLLUM. Calyx inflated. Corolla monopetalous. Stamens 8.

* * Carpels partly united.

4. DIAMORPHA. Calyx 4-cleft. Petals 4. Carpels opening without.
5. PENTHORUM. Calyx 5-cleft. Petals 5. Carpels opening across.

1. SEDUM, L. ORPINE, STONECROP.

Sepals 4–5. Stamens 8 or 10. Carpels distinct, many-seeded, with an entire scale at the base of each. — Herbs smooth and fleshy.

1. **S. telephioides,** Michx. Stem stout, erect or ascending, very leafy throughout; leaves alternate, oblong-obovate, toothed or entire; the lower ones mostly tapering into a petiole, the upper sessile; cymes compact, erect many-flowered; petals flesh-color, ovate-lanceolate, acuminate; stamens 10; carpels acuminate, pointed with the slender style. — Dry rocks, along the mountains. June. — Stem 7′–12′ high. Leaves 1′–1½′ long.

2. **S. ternatum,** Michx. Stems low (3′–8′), branching at the base, ascending; lowest leaves crowded, spatulate or obovate, 3 in a whorl; the upper ones scattered, oval or lanceolate; cyme composed of 3 recurved branches; stamens 8, those of the central flowers 10. — Mountain rocks. May–June. ♃ — Flowers white.

3. **S. pulchellum,** Michx. Stems ascending (4′ – 12′ long); leaves very numerous, alternate, linear, obtuse; cyme composed of several recurved or spreading branches; flowers pale purple; sepals much shorter than the petals; stamens 8, those of the central flowers mostly 10; carpels tapering into the long and slender style. — With the preceding. May – June.

4. **S. Nevii,** Gray. Stems low (3′ – 5′), ascending; leaves alternate, scattered, linear-clavate, obtuse; flowers sessile, scattered along the widely spreading or recurved branches of the simple cyme; bracts linear, longer than the flowers; sepals linear-lanceolate, acutish, as long as the lanceolate white petals; stamens 8, shorter than the petals; anthers purplish brown; carpels tapering into the short subulate style. — Rocky cliffs at Tuscaloosa, Alabama (*Rev. R. D. Nevius*). April – May.

5. **S. pusillum,** Michx. "Pale glaucous; leaves alternate, nearly terete, oblong; flowers tetramerous, in a loose terminal cyme, white; stamens 8; carpels oblong, abruptly pointed by the short style." — Flat Rock, South Carolina (*Michaux*). Stone Mountain, Georgia (*Gray*). — Stem 1′ – 3′ high. Leaves 2″ – 3″ long.

6. **S. Rhodiola,** DC. Stem simple, erect, very leafy (6′ high); leaves alternate, lanceolate, serrate; flowers diœcious, greenish yellow, crowded in a small nearly sessile corymbose cyme; stamens 8. — Mountains of North Carolina (*Canby*).

2. TILLÆA, L.

Sepals, petals, stamens, and carpels 3 or 4; the carpels mostly with a minute scale at the base, 2 – many-seeded. — Small annuals, with opposite leaves, and minute axillary flowers.

1. **T. simplex,** Nutt. Stems mostly simple (2′ – 3′ high), ascending, rooting near the base; leaves connate, broadly linear, spreading; flowers nearly sessile; petals and 8 – 10-seeded capsule twice as long as the sepals. — Wet places, Mobile (*Mohr*).

2. **T. Drummondi,** Torr. & Gray. Stems tufted, dichotomous (1′ high); leaves oblong-linear, somewhat connate; flowers pedicelled; petals reddish; carpels obtuse, 12 – 20-seeded. — East Feliciana, Louisiana (*Carpenter*).

3. BRYOPHYLLUM, Salisb.

Calyx oblong, inflated, 4-cleft. Corolla monopetalous, 4-lobed. Stamens 8. Glands 4, oblong. Carpels many-seeded. — A frutescent fleshy plant, with usually pinnately divided opposite leaves, which freely strike root from buds in their serratures. Flowers reddish, paniculate.

1. **B. calycinum,** Salisb. Leaflets large, ovate, crenate; panicle cymose. — Waste ground, escaped from cultivation.

4. DIAMORPHA, Nutt.

Sepals 4, very short. Petals 4, oval, concave. Stamens 8. Carpels 4, united below the middle, at length spreading, 4 – 8-seeded, opening externally.

— A small (1′-4′) succulent biennial herb, branching from the base. Leaves terete, fleshy. Flowers white.

1. **D. pusilla,** Nutt. — On flat rocks in the upper districts. March-April.

5. PENTHORUM, Gronov.

Sepals 5. Petals 5, often wanting. Stamens 10. Carpels 5, united into a 5-celled capsule, spreading at the summit, which falls away at maturity. Seeds numerous. — Perennial (not fleshy) herbs, with alternate serrate leaves, and yellowish flowers on one side of the revolute branches of the simple cyme.

1. **P. sedoides,** L. Stem erect, 1°-2° high; leaves lanceolate; petals commonly none. — Ditches and muddy places, common. July-Sept.

ORDER 53. HAMAMELACEÆ. (WITCH-HAZEL FAMILY).

Trees or shrubs, with alternate leaves, deciduous stipules, and clustered or spiked, often polygamous or monœcious flowers. — Calyx tube coherent with the base of the ovary. Petals 4-5, long and linear, or none. Stamens twice as many as the petals, with the alternate ones sterile, or numerous and perfect. Styles 2. Capsule woody, 2-celled, opening at the summit. Seeds anatropous, bony, 1-2 in each cell. Embryo large and straight, in scarce albumen.

Synopsis.

1. **HAMAMELIS.** Calyx lobes and petals 4. Fertile stamens 4. Ovules solitary in each cell, suspended.
2. **FOTHERGILLA.** Calyx 5-7-toothed. Petals none. Stamens numerous, all fertile. Ovules solitary, suspended.
3. **LIQUIDAMBAR.** Calyx and corolla none. Flowers polygamous or monœcious, capitate. Stamens numerous. Ovules several.

1. HAMAMELIS, L. WITCH-HAZEL.

Calyx 2-3 bracted, 4-parted. Petals 4, long and linear. Stamens 8, the alternate ones short and sterile. Styles 2. Capsule loculicidally 2-valved at the apex, the outer coat separating from the inner one, which encloses the seed, but soon splits elastically into 2 valves. Seeds large, bony. — Shrubs. Leaves short-petioled. Flowers yellow, clustered.

1. **H. Virginica,** L. — Low woods. Nov. — A large shrub. Leaves obovate or oval, oblique, crenate-toothed, pubescent; flowers appearing when the leaves are falling, late in autumn.

2. FOTHERGILLA, L.

Calyx truncate, obscurely 5-7-toothed. Petals none. Stamens numerous, slender, perfect. Styles 2. Capsule 2-lobed, 2-celled, 2-valved at the apex, with a single bony seed in each cell. — A shrub, with oval or obovate leaves, and white odorous flowers in terminal bracted spikes, appearing before the leaves.

1. **F. alnifolia**, L. — Swamps, Florida to North Carolina. March and April. — Shrub 2° – 4° high. Leaves smooth, or tomentose beneath, toothed at the summit. Capsule hairy.

3. LIQUIDAMBAR, L. Sweet-Gum.

Flowers monœcious, in globular 4-bracted spiked heads. Calyx and corolla none. Stamens very numerous. Styles 2. Ovary 2-celled, with numerous ovules in each cell. Capsules united in a close head, woody, 2-beaked, opening between the beaks, 1 – 2-seeded. — Seeds wing-angled. Trees. Heads of sterile flowers sessile, crowded; those of the fertile flowers on long nodding peduncles.

1. **L. Styraciflua**, L. Branches with corky wings; leaves roundish with 5 – 7 acuminate serrate spreading lobes. — Swamps. March. — A large tree. The exposed juice hardens into a fragrant gum.

Order 54. RHIZOPHORACEÆ. (Mangrove Family.)

Maritime trees or shrubs, with opposite, entire, coriaceous leaves, and deciduous stipules between the petioles. — Calyx united with the ovary, 4 – 12-lobed, valvate or lid-like in the bud. Petals as many as the calyx lobes and alternate with them. Stamens twice or several times as many as the petals, and inserted with them on the calyx. Ovary 2-celled with the cells 2-ovuled, or 1-celled and several-ovuled. Ovules pendulous. Fruit 1-celled, indehiscent. Albumen none. Radicle elongated.

1. RHIZOPHORA, L. Mangrove.

Calyx tube obovate, the limb 4-lobed, persistent. Petals 4, oblong, emarginate, enfolding the alternate stamens in the bud, woolly on the margins. Stamens 8. Anthers linear-oblong. Ovary 2-celled. Seeds germinating within the persistent pericarp, the lengthening radicles, ultimately reaching and rooting in the ground, form new trees and impenetrable thickets along the shore.

1. **R. Mangle**, L. Leaves petioled, obovate-oblong, 3′ – 6′ long; stipules lanceolate, enclosing the buds; peduncles 2 – 3-flowered; calyx lobes keeled within, as long as the pale yellow rigid petals. — Coast and Keys of South Florida.

Order 55. COMBRETACEÆ. (Combretum Family.)

Tropical trees or shrubs, with entire exstipulate leaves, and axillary spiked or capitate flowers. — Calyx tube coherent with the 1-celled, 2 – 5-ovuled ovary; the limb 4 – 5-cleft, mostly deciduous. Petals

4 – 5, often wanting. Stamens 4 – 15, inserted with the petals on the calyx. Style slender: stigma simple. Fruit drupaceous or baccate, or dry and indehiscent, often winged. Seed solitary, suspended, anatropous, without albumen. Cotyledons convolute or variously folded.

1. LAGUNCULARIA, Gært.

Flowers in a spike. Calyx tube obconical, the limb 5-parted, obtuse, persistent. Petals 5, minute. Stamens 10. Style subulate; stigma capitate. Ovary 1-celled, 2-ovuled. Drupe coriaceous, cuneate-obovate, compressed, angled, 1-seeded. Seeds germinating in the drupe. Cotyledons convolute Radicle elongated. — Maritime shrubs, with opposite elliptical smooth and fleshy leaves, on biglandular petioles, and small flowers, in simple or compound axillary and terminal spikes.

1. **L. racemosa,** Gært. Spikes erect, rigid, hoary-tomentose, the lateral ones solitary, the terminal in threes, simple or branched; flowers scattered; calyx tube obconical, furrowed, wing-angled in fruit. — South Florida. June – August. — A shrub or small tree, with the habit of the Mangrove.

2. **L. glabriflora,** Presl. Spikes spreading, slender, smooth, the lateral ones in pairs, the terminal in threes or fours; flowers minute, crowded, deciduous; calyx-tube cup-shaped, terete, even, with two opposite bractlets appressed to the sides. — Banks of the Manatee River, South Florida (*Rugel*). June. — Perhaps a sterile form of the preceding.

2. CONOCARPUS, Gært.

Flowers densely crowded in a globular head. Calyx tube about as long as the compressed 2-ovuled ovary; the limb 5-cleft, deciduous. Petals none. Stamens 5 – 10, exserted. Anthers cordate. Fruit coriaceous, scale-like, closely imbricated and indehiscent. Cotyledons convolute. — Trees or shrubs, with alternate entire and somewhat fleshy leaves. Heads of flowers spiked or panicled.

1. **C. erecta,** Jacq. Branchlets angular, smooth; leaves smooth, oblong or lanceolate, acute or acuminate, narrowed into a biglandular petiole; heads of flowers sessile, or on short spreading pedicels; cone of fruit ovoid. — Var. SERICEA, *DC.* Branches, leaves, and panicles silky and hoary; lowest leaves mostly obovate and obtuse or emarginate; ovary abortive. — Sandy seashore, Tampa Bay, Florida, and southward. Jan. – Feb. — A shrub or small tree. Leaves 2′ – 4′ long. Heads of fruit 3″ – 6″ long. Flowers greenish, minute.

3. TERMINALIA, L.

Flowers in spikes, often polygamous. Limb of the calyx deciduous, bell-shaped, 5-cleft, with the lobes acute. Petals none. Stamens 10, in 2 rows, longer than the calyx. Ovary 2 – 3-ovuled. Style filiform. Drupe dry and indehiscent, 1-seeded. Seed almond-like. Cotyledons spirally convolute. — Trees or shrubs, with mostly alternate leaves, which are crowded at the summit of the branches.

1. **T. Catappa,** L. Leaves short-petioled, softly pubescent when young, at length smoothish, obovate, wedge-shaped but truncated or slightly cordate at the base, with a depressed gland on each side of the midrib near the base; spikes very slender, shorter than the leaves, the upper flowers sterile; drupe ovate, acute, compressed, with the margins somewhat winged. — South Florida. — A large tree. Leaves 4′ – 8′ long. Flowers minute, pale green.

ORDER 56. MYRTACEÆ. (MYRTLE FAMILY.)

Trees or shrubs. Leaves opposite, simple, entire, dotted and commonly with an intra-marginal vein. Stipules none. — Calyx 4 – 6-cleft, valvate in the bud, the tube adherent to the compound ovary. Petals 4 – 6, inserted with the numerous stamens on the throat of the calyx, sometimes wanting. Filaments long, free, or variously combined. Anthers introrse, roundish, longitudinally dehiscent. Style solitary. Seeds without albumen, fixed to a central placenta.

1. EUGENIA, Micheli. ALLSPICE.

Calyx-tube roundish, the limb 4-cleft. Petals 4. Stamens distinct. Ovary 2 – 3-celled, with several ovules in each cell. Fruit baccate, roundish, 1 – 2-celled, 1 – 2-seeded. Cotyledons thick and united. Radicle very short. — Flowers white, axillary, solitary, cymose, or clustered, 2-bracted.

* *Flowers in axillary cymes.*

1. **E. dichotoma,** DC. Leaves oblong-obovate, obtuse or emarginate, rigid, and, like the branches, roughened with appressed hairs, at length smoothish, the margins revolute; peduncles twice as long as the leaves, 3 – 7-flowered, the central flowers sessile; calyx-tube obconical, 2-bracted, downy and hoary, the lobes roundish, spreading; petals orbicular, ciliate; stamens numerous. — South Florida. — A small tree. Leaves 1′ long. Branches compressed.

* * *Flowers solitary or umbellate.*

2. **E. procera,** Poir. Smooth; leaves ovate, tapering but obtuse at the apex, abruptly contracted at the base into a short petiole; peduncles solitary or 2 – 4 together, filiform, not half the length of the leaves, 1-flowered; calyx tube hemispherical; petals orbicular, ciliate; berry globose, 1-seeded. — South Florida. May. — A small tree. Leaves 1½′ – 2′ long. Flowers conspicuous, white and fragrant. Berry as large as a grain of pepper.

3. **E. Garberi,** Sargent. Branchlets slender, terete; leaves coriaceous shining, long attenuate, obtuse, finely punctate-glandular beneath, the thick margins revolute; umbels peduncled, the slender pedicels 1-flowered; berry globose, 1-seeded, scarlet. — Keys of South Florida. — A tree 50° - 60° high, with red bark and very hard wood, fruiting in March and April.

4. **E. longipes,** Berg. Smooth; branchlets very slender; leaves (1′ or less long) oblong-oval or obovate, short-petioled, obtuse; flowers large, single, or by pairs, lateral, or at the base of the branchlets, on long (1′ – 1½′) bibrac-

teolate peduncles; petals oblong, spreading, as long as the stamens and slender style; berry large. — No Name Key, South Florida (*Curtiss*). — A shrub or small tree.

* * * *Flowers minute, in very short cluster-like racemes.*

5. **E. monticola,** DC. Smooth; leaves coriaceous, ovate-oblong, somewhat tapering towards the apex, but obtuse or emarginate, contracted at the base into a distinct petiole; racemes clustered, several-flowered, shorter than the petiole; stamens numerous; berry globose. — South Florida. — Shrub 4° – 6° high. Branches compressed. Leaves 2′ long. Flowers white. Berries abundant, as large as a grain of pepper, black.

6. **E. buxifolia,** Willd.? Leaves smooth, coriaceous, obovate-oblong, rounded at the apex, short-petioled; racemes single or clustered, few-flowered about as long as the petiole; flowers minute; stamens few (9 – 12) or numerous; berry 1 – 3-seeded. — South Florida. — Varies much in the size of the leaves and berries, length of the petiole, and number of stamens.

2. CALYPTRANTHES, Swartz.

Calyx tube obovate; the limb entire, opening across like a lid, deciduous. Petals none. Stamens numerous. Ovary 2 – 3-celled, with 2 ovules in each cell. Berry 1-celled, 1 – 4-seeded. Seeds roundish; testa smooth. Embryo curved; the long and slender radicle coiled around the distinct unequal folded and contorted cotyledons. — Shrubs or trees. Peduncles axillary, many-flowered.

1. **C. Chytraculia,** Swartz. Leaves ovate and ovate-lanceolate, acuminate but obtuse, pubescent, becoming smooth above; peduncles longer than the leaves, cymose-panicled, tomentose; flowers minute; berry dry, globose, 1 – 2-seeded. — South Florida. — A small tree.

ORDER 57. MELASTOMACEÆ. (MELASTOMA FAMILY.)

Herbs, shrubs, or trees, with opposite 3 – 9-ribbed leaves without dots or stipules, and showy flowers. — Calyx urn-shaped, 4 – 6-lobed, persistent, cohering with the ovary below, or with its angles. Petals 4 – 6, twisted in the bud, inserted with the 4 – 12 stamens on the throat of the calyx. Anthers adnate, often appendaged, usually opening by terminal pores. Ovary 3 – 6-celled. Ovules numerous, attached to the central placentæ. Style solitary. Fruit baccate and indehiscent, or capsular and loculicidally dehiscent. Seeds anatropous, without albumen.

1. RHEXIA, L. DEER-GRASS.

Calyx tube prolonged and narrowed above the ovary, 4-cleft. Petals 4, roundish, deciduous. Stamens 8. Anthers 1-celled, opening by a terminal pore. Capsule 4-celled, many-seeded. — Perennial herbs. Leaves 3 – 5-ribbed. Flowers cymose, terminal.

* *Anthers long, linear, curving upward (except No. 6), saccate at the base, and commonly furnished with a bristle-like appendage at the insertion of the filaments: flowers purple or whitish.*

1. **R. Mariana,** L. Bristly; stem branched, terete or 6-angled; leaves lanceolate, acute, short-petioled, bristly serrate; calyx mostly smooth, cylindrical in flower, the neck in fruit as long as the globose capsular portion; flowers purple. — Varies with narrower, often linear leaves, and smaller whitish flowers. (R. lanceolata, *Walt.*) — Swamps. July – Sept. — Stem 1° – 2° high. Leaves 3-ribbed. Flowers 1½′ – 2′ wide, hairy externally.

2. **R. Virginica,** L. Bristly; stem 4-angled, nearly simple; leaves ovate and ovate-lanceolate, barely acute, sessile, bristly serrate, the lowest rounded; neck of the bristly fruiting calyx shorter than the capsular portion; the lobes ovate, acuminate. — Swamps, in the upper districts. July – August. — Stem 6′ – 12′ high. Leaves 3 – 5-ribbed. Flowers purple.

3. **R. stricta,** Pursh. Stem tall, smooth, 4-winged, bearded at the joints; leaves lanceolate and ovate-lanceolate, acute or acuminate, 5-ribbed, bristly serrate, sessile; cyme compound; calyx smooth, urn-shaped, the lobes lanceolate. — Margins of ponds in the pine barrens of the lower districts. July – August. — Stem 2° – 4° high. Leaves rugose, the lateral ribs obscure. Flowers purple.

4. **R. glabella,** Michx. Stem terete, smooth, mostly simple; leaves lanceolate, sessile, entire or slightly serrulate, thick, smooth and glaucous; calyx smooth or bristly; flowers large, bright purple. — Low pine barrens. June – August. — Root spongy. Stem 2° – 3° high. Leaves sweetish.

5. **R. aristosa,** Britton. Smooth; stem sharply angled, branching, 1½° high; leaves sessile, linear-oblong, bristly serrulate, 1′ or less long; cyme few-flowered; calyx bristly, the lanceolate lobes as long as the neck; petals deep purple. — Low ground near Sumpterville, South Carolina (*J. D. Smith*).

6. **R. parviflora,** n. sp. Sparsely bristly; stem low (6′ – 12′ high), much branched, 4-angled; leaves lanceolate, bristly serrulate, short-petioled, 1′ long; cymes few-flowered; flowers ½′ wide, white; anthers linear, straight, erect, appendaged, as long as the erect filaments; style declining. — Shallow ponds, Apalachicola, Florida. June – July.

* * *Anthers short, oblong, erect, not appendaged: neck of the calyx short.*

+ *Flowers purple: leaves small, ovate or roundish, bristly serrulate.*

7. **R. ciliosa,** Michx. Stem simple, smooth, 4-angled above; leaves bristly on the upper surface, 3-ribbed; cyme few-flowered, leafy; calyx smooth. — Bogs in the pine barrens of the lower districts. July – August. — Stem 1° – 1½° high. Leaves rarely 1′ long. Flowers 1′ – 1½′ in diameter.

8. **R. serrulata,** Nutt. Low; stem simple, 4-angled, smooth; leaves smooth above; calyx glandular-bristly; cyme leafy, 1 – 6-flowered. — Open flat pine barrens, near the coast, Florida, Georgia, and westward. July – August. — Stem 2′ – 6′ high. Leaves and flowers smaller than in the preceding.

+- +- *Flowers yellow.*

9. **R. lutea,** Walt. Stem at length much branched, 4-angled, bristly; leaves smoothish, bristly serrulate, the lower ones obovate and obtuse, the upper lanceolate and acute; cymes numerous; calyx short and smooth; flowers small. — Pine barren swamps, Florida to North Carolina, and westward. July – August. — Stem 1° high. Petals more persistent than those of the other species.

ORDER 58. LYTHRACEÆ. (LOOSESTRIFE FAMILY.)

Chiefly herbs, with opposite or whorled and entire leaves, without stipules. Flowers mostly axillary. — Calyx tubular, persistent, 4–7-toothed, free from the 2–4-celled ovary. Petals as many as the teeth of the calyx and inserted into its throat, deciduous, sometimes wanting. Stamens as many as the petals, or 2–4 times as many, inserted below the petals. Anthers short, introrse. Style solitary. Capsule enclosed in the calyx, 1–4-celled, few- or many-seeded. Placentæ central. Seeds anatropous, without albumen. — Sinuses of the calyx often appendaged. Stigma capitate, or rarely 2-lobed.

Synopsis.

* Calyx regular.

1. DIDIPLIS. Calyx hemispherical. Petals none. Stigma 2-lobed. Capsule 2-celled.
2. AMMANNIA. Calyx campanulate. Stigma capitate. Capsule 4-celled.
3. LYTHRUM. Calyx cylindrical, striate. Capsule oblong, 2-celled.
4. NESÆA. Calyx short, even. Capsule globose, 3–5-celled. Stamens 10.

* * Calyx gibbous at the base.

5. CUPHEA. Calyx tubular, 12-ribbed. Stamens mostly 12. Capsule early ruptured.

1. DIDIPLIS, Raf.

Calyx hemispherical or campanulate, 4-lobed. Petals none. Stamens 2–4. Style very short: stigma 2-lobed. Capsule globose, 2-celled. — A submerged aquatic herb, with long filiform stems, opposite crowded pellucid linear leaves, and minute sessile axillary flowers.

1. **D. linearis,** Raf. — Ponds and still water, West Florida to North Carolina, and westward. June – August. — Stems 1°–2° long. Leaves 1′ long, acute. Flowers not larger than a pin's head.

2. AMMANNIA, Houston.

Calyx globular or campanulate, 4-angled, 4-toothed, the sinuses commonly furnished with a small horn-shaped appendage. Petals 4, small, deciduous, sometimes wanting. Stamens 4, short. Stigma capitate. Capsule globular, 4-celled, many-seeded. — Low smooth annual herbs, with opposite leaves, and solitary or clustered axillary flowers.

* *Capsule bursting irregularly: flowers mostly clustered.*

1. **A. coccinea,** Roettb. Stem mostly branching, 2° high; leaves linear-lanceolate, dilated and auriculate at the base; flowers nearly sessile; style and stamens exserted; petals round-obovate, purple. — Wet banks, South Carolina, and westward. July – Sept.

2. **A. latifolia,** L. Stem simple, 1° – 1½° high; lower leaves oblong, short-petioled, the upper auriculate-clasping, or sessile; flowers sessile; petals none; stamens and short style included. — Ditches and wet banks in the lower districts. July – Sept.

* * *Capsule valvate: flowers solitary.* — ROTALA.

3. **A. humilis,** Michx. Stem simple, or branching from the base, 6′ – 12′ high; leaves lanceolate, or the upper linear, obtuse, tapering into a short petiole; flowers nearly sessile; style short; petals 4, white. — Ditches and muddy banks. July – Sept.

3. LYTHRUM, L. LOOSESTRIFE.

Calyx cylindrical, striate, 4 – 7-toothed, usually with minute appendages in the sinuses. Petals 4 – 7. Stamens as many as the petals, or twice as many, inserted on the lower part of the calyx, nearly equal. Capsule oblong, 2-celled, many-seeded. — Herbs, with opposite or alternate leaves, and axillary purple or whitish flowers.

1. **L. alatum,** Pursh. Smooth; stem and virgate branches 4-angled; leaves lanceolate, acute at both ends, opposite, the uppermost alternate, and shorter than the flowers; petals and stamens 6. — Varies with branches shorter, leaves larger (2′ long), broadly lanceolate, sometimes whorled, the uppermost twice as long as the calyx. (L. lanceolatum, *Ell.*) — Swamps and river banks. July – Sept. — Stem 2° – 4° high. Flowers violet-purple.

2. **L. flagellare,** Shuttlw. Perennial, creeping, smooth; the branches erect, terete; leaves opposite, nearly sessile, rigid, oblong; flowers single, shorter than the leaves, the short pedicel bibracteolate; calyx club-shaped, 6-toothed, the teeth broad and shorter than the subulate appendages; petals 6, spatulate, bright purple; stamens and style exserted. — Margins of ponds, Sarasota, South Florida (*Garber*). — Branches 6′ – 12′ high. Leaves 4″ – 6″ long.

3. **L. lineare,** L. Smooth; stem 4-angled, much branched; leaves all opposite, linear; flowers small, whitish; petals and stamens 6. — Brackish marshes along the coast. August. — Stem 2° – 4° high. Calyx teeth short.

4. NESÆA, Commerson.

Calyx hemispherical or campanulate, with 4 – 7 erect teeth, and as many longer and spreading horn-like appendages in the sinuses. Petals 4 – 7. Stamens twice as many as the petals. Capsule globose, 3 – 4-celled. — Perennial herbs or shrubby plants, with opposite or whorled leaves, and clustered pedicelled flowers in their axils.

1. **N. verticillata,** HBK. Shrubby; stems pubescent, recurved; leaves opposite and whorled, lanceolate, tomentose beneath; peduncles short, 3- or several-flowered; petals 5, showy; stamens 10, the alternate ones shorter. — Marshes and margins of ponds. August. — Stems 3°-4° long. Flowers purple.

5. CUPHEA, Jacq.

Calyx tubular, 12-ribbed, gibbous or spurred at the base on the upper side, 6-toothed, and usually with as many little appendages in the sinuses. Petals 6, unequal. Stamens 11-12, unequal. Ovary with a gland at the base next the spur of the calyx. Style filiform. Stigma 2-lobed. Capsule 1-2-celled, few-seeded. — Chiefly herbs, with branching stems and purplish flowers.

1. **C. viscosissima,** Jacq. Annual, clammy-pubescent; leaves thin, opposite, ovate-lanceolate, long-petioled, rough; flowers nearly sessile, borne between the petioles, solitary; petals violet-purple; stamens 12. — Upper districts. August. — Stem 1° high.

2. **C. aspera,** Chapm. Perennial; muricate-hispid and clammy; leaves 3-4 in a whorl, lanceolate, nearly sessile; peduncles longer than the leaves, borne between the petioles (whorled); petals white or pale purple; stamens 11. — Low pine barrens, West Florida. — Stem 1°-1½° high. Leaves 1′ long, rigid. Root bearing small tubers.

The CRAPE MYRTLE (LAGERSTRŒMIA INDICA, *L.*), originally from Eastern Asia, is common in cultivation.

ORDER 59. HALORAGEÆ. (WATER-MILFOIL FAMILY.)

Aquatic herbs, with finely dissected leaves, and small sessile flowers, axillary or in bracted spikes. — Calyx tube adherent to the 1-4-celled ovary. Petals (when present) and stamens inserted on the throat of the calyx. Cells of the ovary with a single suspended ovule. Stigmas 1-4, sessile. Fruit indehiscent. Embryo in the axis of fleshy albumen.

1. PROSERPINACA, L.

Calyx tube 3-sided, 3-lobed. Petals none. Stamens 3. Stigmas 3. Fruit bony, 3-angled, 3-celled, 3-seeded. — Herbs with pinnately dissected leaves, and minute axillary greenish flowers.

1. **P. palustris,** L. Leaves lanceolate, sharply serrate, the submerged ones pectinate. — Ponds and ditches. June-August. — Stem 1°-1½° long, ascending or floating.

2. **P. pectinacea,** Lam. Leaves all pectinate, the divisions filiform; fruit rugose. — With the preceding. — Stem 3′-12′ long.

2. MYRIOPHYLLUM, Vail. WATER-MILFOIL.

Flowers monœcious or polygamous. Calyx 4-parted in the sterile flowers, 4-toothed in the fertile ones. Petals 4 or none. Stamens 4 or 8. Stigmas 4, recurved. Fruit bony, 4-celled, 4-lobed, indehiscent. — Aquatic perennial herbs, with the submerged leaves pinnately divided into filiform or capillary segments, and commonly whorled. Flowers minute in the axils of the upper leaves; the uppermost sterile.

* *Stamens* 8 : *fruit even or warty.*

1. **M. laxum,** Shuttlw. Stem long, slender; leaves 4 in a whorl; the floral ones reduced to minute nearly entire spatulate bracts, shorter than the flowers, which thus form an interrupted almost naked spike; fruit roughened with minute warts, with the lobes obtuse. — Ponds and lakes, Middle and West Florida. July.

2. **M. verticillatum,** L. Leaves in whorls of 3 – 4, the floral ones linear, pectinately toothed, much longer than the flowers; fruit smooth. — Still water in the lower districts. July. — Stem 2° – 4° long, stouter than the last.

* * *Stamens* 4 : *fruit ridged and roughened.*

3. **M. heterophyllum,** Michx. Stem thick; leaves 4 – 6 in a whorl, the floral ones crowded, ovate or lanceolate, finely and sharply serrate; the lower ones pinnatifid; fruit slightly roughened. — Ponds and ditches. July.

4. **M. scabratum,** Michx. Stem short (6′ – 12′); leaves 4 – 5 in a whorl, the divisions few and capillary, the floral ones linear, pectinately toothed; fruit strongly ridged and roughened. — Shallow ponds, South Carolina. June – July.

ORDER 60. ONAGRACEÆ. (EVENING-PRIMROSE FAMILY.)

Calyx adherent to the ovary, and often produced into a tube beyond it, 2 – 6-lobed, valvate in the bud. Petals as many as the lobes of the calyx, inserted on its throat, convolute in the bud, sometimes wanting. Stamens as many or twice as many, inserted with the petals. Ovary 2 – 4-celled. Placenta central. Style solitary: stigma capitate or 2 – 4-lobed. Capsule loculicidally dehiscent or indehiscent. Seeds anatropous, with little or no albumen. — Chiefly herbs.

Synopsis.

* Calyx tube produced beyond the ovary.

1. **GAURA.** Capsule nut-like, indehiscent, 1 – 4-seeded.
2. **ŒNOTHERA.** Capsule 4-valved, many-seeded.

* * Calyx tube not produced beyond the ovary.

3. **EPILOBIUM.** Stamens 8. Petals 4. Seeds comose.
4. **JUSSIÆA.** Stamens 8 – 12. Petals 4 – 6. Capsule long. Seeds naked.
5. **LUDWIGIA.** Stamens 4. Petals 4, or none. Capsule short, many-seeded.
6. **CIRCÆA.** Stamens 2. Capsule obovate, 1 – 2-seeded.

1. GAURA, L.

Calyx tube much produced beyond the ovary, the limb 3 – 4-lobed, reflexed, deciduous. Petals 3 – 4, clawed, unequal or turned to the upper side. Stamens 6 – 8. Style declined: stigma 4-lobed. Ovary 3 – 4-celled. Fruit 3 – 4-

angled, mostly 1-celled, 1–4-seeded. — Herbs with alternate leaves, and white or purple flowers in a long-peduncled raceme or spike.

1. **G. biennis,** L. Soft-hairy; leaves oblong lanceolate, acuminate, becoming smoothish, wavy-denticulate on the margins; petals spatulate, white; fruit obtusely 4-angled, acuminate at both ends, sessile. — Dry soil, Georgia to Tennessee, and northward. July – August. ② — Stem 3°–8° high Spikes compound.

2. **G. longiflora,** Spach. Canescent-puberulent; stem paniculately branched; leaves lanceolate, acute, wavy-denticulate, sessile; spikes panicled; calyx lobes longer than the tube, and the long-clawed white petals; fruit sessile, ovate, obtuse, sharply 4-angled. — Dry soil, North Georgia and Alabama. July. — Stem 4°–6° high. Fruit 2″ long.

3 **G. angustifolia,** Michx. Stem simple, or sparingly branched, closely pubescent; leaves lanceolate, acute, coarsely toothed, often blotched with purple; the uppermost linear and nearly entire; fruit nearly sessile, acute at both ends, sharply 3–4-angled. — Dry old fields and sandy places near the coast. June – August. ② — Stem 2°–3° high. Flowers white.

4. **G. filipes,** Spach. Pubescent and somewhat hoary, becoming smoothish; stem slender, paniculately branched; leaves linear, toothed, wavy; fruit ovoid, obtuse, sharply 4-angled, on slender pedicels. — Dry pine barrens, Florida to South Carolina, and westward. July – Sept. ②? — Stem 2°–3° high, very leafy.

2. ŒNOTHERA, L. Evening-Primrose.

Calyx tube produced beyond the ovary; the limb 4-lobed, reflexed and deciduous. Petals 4. Stamens 8. Stigma 4-lobed. Capsule 4-valved, many-seeded. — Herbs, with alternate leaves, and axillary or racemose chiefly yellow flowers. Pollen grains triangular, connected by cobwebby hairs.

* *Capsule cylindrical, sessile: flowers expanding at night: annuals or biennials.*

1. **Œ. biennis,** L. Hairy, hirsute, or smoothish; stem tall, often simple; leaves lanceolate and ovate-lanceolate, acute, wavy and toothed or serrate on the margins; the earliest ones sometimes pinnatifid; spikes leafy, at length elongated; calyx tube longer than the lobes; flowers large. — Fields and waste places, everywhere. June – Sept. — Stem 2°–4° high. Varies greatly in pubescence and size of the flower.

2. **Œ. heterophylla,** Spach. Hirsute; stem 2°–4° high, branching; earliest leaves tufted, oblanceolate, pinnately 12–20 lobed, the upper smaller and entire; flowers few, terminal, often tripetalous; petals rhombic-ovate; capsule curved. — Valley of Flint River, Bainbridge, Georgia. July.

3. **Œ. humifusa,** Nutt. Densely canescent-pubescent; stem mostly decumbent and branching, 1°–1½° long; leaves lanceolate or wedge-obvate, mostly entire, ½′–1½′ long, nearly sessile; calyx villous; style slightly exserted; capsule mostly curved, ¾′ long. (Œ. sinuata, var. *Torr. & Gray.*) — Sandy coast. July – Nov. — Root mostly perennial.

4. **Œ. sinuata,** L. Annual, pubescent; stem rigid, erect or diffuse, simple or branched, 2′–1° high; leaves lanceolate or oblong, toothed or pin-

natifid, the lowest petioled; flowers small, axillary. (Œ. minima, *Pursh*, the dwarf form, with a simple 1-flowered stem, and entire leaves.) — Fields and waste grounds. June – Sept.

* * *Capsule obovate or clavate, furrowed, and more or less peduncled: flowers expanding in sunshine.*

5. **Œ. glauca,** Michx. Smooth and somewhat glaucous; leaves sessile, oblong-ovate, wavy-denticulate, acute; racemes few-flowered, leafy; flowers large; capsule ovoid-oblong, 4-winged, tapering into a short pedicel — Mountains. May – July. ♃ — Stem branching, 2° – 3° high. Leaves 2′ – 3′ long. Flowers 2′ in diameter.

6. **Œ. fruticosa,** L. Hairy or smoothish; stem mostly simple; leaves lanceolate, commonly wavy and remotely denticulate on the margins; raceme at first corymb-like, at length elongated; flowers large; capsule 4-winged, with intermediate ribs, oblong-clavate, longer than the pedicel. — Fields and open woods. June – Sept. ♃ — Stem 1° – 2° high. Flowers 1′ – 2′ in diameter.

7. **Œ. linearis,** Michx. Stem slender, smooth below, pubescent above; the young branches hoary; lowest leaves obovate, the others linear-lanceolate, entire or sparingly denticulate; raceme short, many-flowered, leafy; capsule obovate, 4-winged, with conspicuous intermediate ribs, mostly shorter than the pedicel. — Dry light soil in the lower districts. April – June. — Stem 1° – 1½° high. Flowers 1′ in diameter.

8. **Œ. pumila,** L. Low, smoothish; leaves lanceolate, obtuse; raceme leafy; flowers small; capsule oblong-obovate, 4-wing-angled, nearly sessile. — Tennessee, and northward, and occasionally also around dwellings in the low country, from seeds introduced in Northern hay. June. — Stem 6′ – 12′ high. Flowers ½′ in diameter.

9. **Œ. linifolia,** Nutt. Low, smoothish; stem at length much branched; leaves very numerous, linear-filiform, the lowest spatulate; raceme pubescent, few-flowered; bracts shorter than the ovary; flowers small; lobes of the stigma coherent into a globular head; capsule obovate, 4-angled, nearly sessile. — Gravelly hills, near Scott's Mill, Warren County, Georgia, and westward. June. — Stem 6′ – 12′ high. Flowers 4″ – 5″ in diameter.

* * * *Stemless: flowers sessile at the base of the tufted leaves, pale yellow or white: capsule oval or oblong, broadly winged.*

10. **Œ. triloba,** Nutt. Perennial, nearly stemless, cæspitose; leaves pinnatifid, smoothish; calyx tube very long (3′ – 5′), filiform, the lobes longer than the somewhat 3-lobed pale yellow petals; capsule sessile, 3-winged. — Nashville, Tennessee (*Dr. Gattinger*).

3. EPILOBIUM, L. Willow-Herb.

Calyx tube not prolonged beyond the ovary; the limb 4-cleft, deciduous. Petals 4. Stamens 8. Capsule elongated, many-seeded. Seeds with a tuft of long hairs at the apex. — Perennials, with alternate and opposite denticulate leaves, and chiefly white or purple flowers.

1. **E. angustifolium,** L. Stem tall, simple, smoothish; leaves alternate, lanceolate, entire or wavy on the margins, paler beneath; racemes elongated, bracted; flowers showy; petals obovate, purple; stigma 4-lobed; capsule and calyx hoary-tomentose. (E. spicatum, *Lam.*) — Mountains of North Carolina. July. — Stem 3° – 6° high.

2. **E. coloratum,** Muhl. Stem smoothish, much branched; leaves mostly opposite, lanceolate or ovate-lanceolate, denticulate; raceme leafy; flowers small, reddish; petals 2-cleft; stigma clavate; capsule downy. — Swamps in the upper districts. August. — Stem 1° – 2° high.

3. **E. palustre,** L., var. **lineare,** Gray. Stem pubescent, branching above; leaves linear, slightly denticulate, the lower ones opposite; raceme leafy; flowers small, white, or rose-color; stigma clavate; capsule hoary. — Mountains of North Carolina. August. — Stem 1° – 2° high.

4. JUSSIÆA, L.

Calyx tube long, 4-angled or cylindrical, not prolonged beyond the ovary; the limb 4 – 6-lobed, persistent. Petals 4 – 6. Stamens 8 – 12. Capsule mostly elongated, 4 – 6-celled, many-seeded, opening irregularly at the sides. — Marsh herbs, with alternate leaves, and axillary yellow flowers.

* *Capsule cylindrical.*

1. **J. pilosa,** HBK. Hairy; stem erect, at length much branched; leaves lanceolate, acute; flowers small; calyx lobes mostly 6, as long as the petals; capsule linear, cylindrical, much longer than the pedicel. — Marshes, Florida, and westward. June – Sept. ① — Stem 2° – 5° high. Capsule 1½′ long, slightly curved.

2. **J. grandiflora,** Michx. Hairy; stem creeping at the base; leaves lanceolate, acute; flowers large; calyx lobes 5, half as long as the petals; ovary (rarely maturing) rather shorter than the pedicel. — Marshes, South Carolina, and westward. May – August. ♃ — Stem 2° – 3° long. Flowers 2′ in diameter. Capsule cylindrical.

3. **J. repens,** L. Smooth, creeping or floating; leaves oblong, obtuse tapering into a slender petiole; flowers large; calyx lobes 5, shorter than the petals; capsule cylindrical, much shorter than the long (2′) peduncle. — Ponds and ditches, New Orleans. August.

* * *Capsule quadrangular.*

4. **J. decurrens,** DC. Smooth; stem erect, branched, wing-angled; leaves lanceolate, acute, sessile; flowers nearly sessile; calyx lobes 4, nearly as long as the petals; stamens 8; capsule 4-angled, oblong-clavate. — Ditches, etc. July – Sept. ① — Stem 6′ – 3° high.

5. **J. acuminata,** Swartz. Smoothish; stem angular, much branched; leaves lanceolate, or the upper narrower, acute at both ends, short-petioled, 2′ – 3′ long; flowers nearly sessile, 2″ – 3″ wide; sepals 4, ovate, shorter than the oblong-obovate petals; capsule quadrangular, 6″ – 8″ long, 8-ribbed. — Wet ground, South Florida.

6. **J. hirta,** Vahl. Shrubby, hirsute; branches terete; leaves broadly lanceolate, acute at each end; ovary clavate, as long as the 2-bracted pedicel; calyx lobes 4, ovate-lanceolate, acuminate, longer than the tube, shorter than the roundish petals; capsule clavate-oblong, obscurely 4-sided, longer than the bracts. — Muddy banks of rivers. South Florida. — Shrub 5° – 10° high.

5. LUDWIGIA, L. Seed-box.

Calyx tube 4-angled or cylindrical, mostly short, not prolonged beyond the ovary. Petals 4, roundish or obcordate, often wanting. Stamens 4. Style short. Stigma capitate. Capsule variously dehiscent, 4-celled, many-seeded. — Perennial and mostly stoloniferous marsh herbs, with entire leaves, and yellow flowers.

* *Capsule cubical, indehiscent, discharging the seeds through a central pore of the convex disk: calyx lobes deciduous: petals large: stamens and style slender: leaves alternate: flowers pedicelled.*

1. **L. alternifolia,** L. Smoothish; stem much branched; leaves lanceolate, short-petioled, acute; calyx lobes spreading, about as long as the petals; capsule large, wing-angled. — Shady swamps. August. — Stem 2° – 3° high. Flowers axillary, or the upper ones somewhat racemed.

2. **L. virgata,** Michx. Tomentose; stem slender, simple, or branching from the base; leaves obtuse, sessile, the lowest oblong, the uppermost linear; flowers in elongated leafy racemes; petals twice as long as the reflexed calyx lobes; capsule strongly 4-angled. — Low pine barrens, sometimes in rather dry places. July – August. — Stem 2° – 3° high. Varies considerably in pubescence, and in size of the flowers and capsule.

3. **L. hirtella,** Raf. Hairy; stem slender, simple or sparingly branched; leaves short, lanceolate or oblong, obtuse, sessile and rounded at the base; flowers axillary; petals twice as long as the erect or spreading calyx lobes; capsule strongly angled. — Flat pine barrens. August. — Stem 2° – 3° high.

* * *Valves of the capsule separating from the concave disk, and irregularly from the persistent partitions and placenta: calyx lobes persistent: petals small or none: stamens and style short: stems erect or ascending: leaves alternate: flowers sessile.*

+ *Petals conspicuous.*

4. **L. linearis,** Walt. Smooth; stem (1° – 3° high) virgately much branched; leaves linear, acute; flowers small; capsule clavate-oblong, with 4 rounded angles, 2 – 3 times as long as the triangular-ovate calyx lobes. — Ditches and ponds in the lower districts. July – Sept. — Bark at the base of the stem spongy.

5. **L. linifolia,** Poir. Smooth; stem low (6′ – 12′), creeping at the base, branching; leaves linear or linear-spatulate, often obtuse; capsule linear-cylindrical, rather longer than the lanceolate calyx lobes. — Ditches and swamps in the lower districts. July – Sept.

+ + *Petals minute or wanting.*

6. **L. cylindrica,** Ell. Smooth; stem angled above, often much branched; leaves long, lanceolate, obscurely denticulate, acute, tapering into

a petiole; petals none; capsules axillary, often clustered, cylindrical or obscurely 4-sided, many times longer than the small calyx lobes. — Swamps, Florida to South Carolina, and westward. July – Sept. — Stem mostly bushy, 2° – 3° high. Leaves 3′ – 4′ long.

7. **L. pilosa,** Walt. Tomentose; stem stout, terete, much branched; leaves sessile, lanceolate or oblong, acute; flowers in dense terminal spikes; petals mostly wanting; capsule globose – 4-sided, about as long as the spreading calyx lobes. — Ditches and ponds near the coast. July – Sept. — Stem 2° – 3° high, the branches spreading. Capsule whitish.

8. **L. sphærocarpa,** Ell. Smooth or slightly pubescent; stem slender, angled above, short-branched; leaves linear-lanceolate, acuminate; flowers very small, axillary; petals none; capsule globose, pubescent, as long as the calyx lobes. — Margins of ponds in the lower districts, not common. July – Sept. — Stem 2° – 3° high. Capsule 1″ – 2″ long.

9. **L. polycarpa,** Short & Peters. Glabrous; stem angular, much branched; leaves narrowly lanceolate, acute, tapering at the base; flowers approximate or crowded on the branches, apetalous; capsule top-shaped, twice as long as the ovate calyx lobes. — Ponds and ditches, Tennessee. July.

10. **L. capitata,** Michx. Smooth; stem mostly simple, slender, angled above; leaves long, lanceolate, acute, sessile, the lowest ones broader and obtuse; flowers in a compact oblong or ovate head, the lower ones sometimes scattered; petals minute, mostly wanting; capsule obtusely 4-angled, somewhat narrower at the base, longer than the calyx lobes. — Wet pine barrens, Florida to North Carolina. July – August. — Stem 2° – 3° high.

11. **L. lanceolata,** Ell. Smooth; stem stout, terete, at length much branched; leaves lanceolate, sessile; flowers very numerous, in all the axils, green; petals none; capsule cubical, with the sides flat and the angles margined, twice as long as the calyx lobes; seeds cylindrical. — Ponds and swamps in the pine barrens, Florida and Georgia. July – Sept. — Stem 1° – 2° high. Flowers small.

12. **L. alata,** Ell. Smooth; stem slender, simple or sparingly branched near the summit, strongly angled; leaves cuneate-lanceolate, obscurely denticulate; flowers few, near the summit of the branches, white; petals none; capsule cubic-obconical, with concave sides and winged angles, as long as the calyx lobes; seeds ovoid. — Brackish marshes, along the coast. July – August. — Stem 2° – 3° high.

13. **L. microcarpa,** Michx. Smooth; stem low, creeping at the base 3-angled, mostly simple; leaves spatulate-obovate; petals none; capsule minute, cubic-obconical, shorter than the calyx lobes. — Muddy places, Florida to North Carolina, and westward. July – August. — Stem 6′ – 12′ high. Capsule scarcely larger than a pin's head.

14. **L. Curtissii,** Chapm. Smooth; stem rigidly erect, simple, terete; upper leaves linear-lanceolate, tapering at the base; flowers single, sessile, apetalous, bibracteolate; calyx turbinate, terete, the triangular lobes as long as the tube. — Shallow ponds, East Florida (*Curtiss*). July – August. — Stem 1° – 1½° high.

15. **L. Simpsoni,** Chapm. Glabrous; stem 2′–9′ high, terete, simple; leaves ½′ long, spatulate-obovate, alternate, or the lowest opposite; flowers apetalous; capsule top-shaped, obscurely angular, longer than the triangular calyx lobes. — Low ground, Manatee, South Florida.

* * * *Stems creeping: leaves opposite.*

+ *Petals none.*

16. **L. palustris,** Ell. Smooth; stems diffuse; leaves obovate, tapering into a long petiole; capsule oblong or obconical, obscurely 4-sided, longer than the calyx lobes. — Ditches and muddy places, common. June – Sept. — Stems 6′–12′ long.

17. **L. spathulata,** Torr. & Gray. Pubescent and somewhat hoary; leaves spatulate-obovate; capsule ovoid; otherwise like the preceding. — Margins of pine barren ponds, Middle Florida. July – August. Very rare.

+ + *Petals* 4.

18. **L. natans,** Ell. Smooth; stems diffuse; leaves obovate, acutish, tapering into a long petiole; flowers short-pedicelled; petals roundish, as long as the lobes of the calyx; capsule obtusely 4-angled, narrowed at the base. — Marshes and margins of streams, in the lower districts. July – Sept. — Resembles No. 16 but is every way larger.

19. **L. arcuata,** Walt. Smooth; leaves lanceolate, narrowed at the base, acute; flowers on peduncles usually longer than the leaves, 2-bracted at the base; calyx lobes linear-lanceolate, shorter than the obovate petals; capsule clavate, curved. — Muddy margins of ponds, etc., Florida to North Carolina. July. — Stems 4′–8′ long.

6. CIRCÆA, Tourn.

Calyx tube slightly produced beyond the ovary, the limb 2-cleft, deciduous. Petals 2, obcordate. Stamens 2. Style filiform. Capsule obovate, 1–2-celled, 1–2-seeded, bristly with hooked hairs. — Perennial herbs, with opposite petioled leaves, and small white or rose-colored flowers in loose terminal racemes.

1. **C. Lutetiana,** L. Minutely pubescent; leaves ovate, acuminate, slightly toothed, usually longer than the petioles; bracts none; capsule hispid. — Damp shades along the mountains. July. — Stem 1°–2° high, tumid at the joints. Fruit reflexed. Flowers reddish white.

2. **C. alpina,** L. Smooth; stem low (3′–8′); leaves membranaceous, cordate, coarsely toothed, as long as the petioles; pedicels minutely bracted; capsule hairy. — With the preceding.

Order 61. LOASACEÆ. (Loasa Family.)

Herbs, commonly armed with bristly barbed, often stinging, hairs. Leaves alternate, exstipulate. Flowers solitary or clustered. — Calyx tube adherent to the 1-celled ovary, the limb 5-parted and persistent. Petals 5 or 10, inserted on the throat of the calyx. Stamens mostly indefinite, in several parcels, inserted with the petals. Styles united. Capsule irregularly dehiscent. Seeds few or many, borne on 3 – 5 parietal placentæ, commonly with scanty albumen.

1. MENTZELIA, Plum.

Calyx tube cylindrical or club-shaped. Petals convolute in the bud. Stamens commonly 30 or more, the exterior ones often dilated and sterile. Styles 3, united to the middle. Capsule 3-valved at the summit, with 3 parietal placentæ. Cotyledons broad and flat. — Stems branching. Leaves toothed or sinuate-pinnatifid. Flowers yellow.

1. **M. Floridana,** Nutt. Leaves deltoid-ovate, toothed, truncate and 2-lobed at the base; stamens about 30; capsule 6-seeded. — South Florida. — Stem trailing, 2° – 6° long. Flowers small, golden-yellow.

ORDER 62. TURNERACEÆ. (TURNERA FAMILY.)

Herbs or shrubs, with alternate simple exstipulate leaves, and solitary axillary flowers. — Calyx free from the 1-celled ovary, colored, 5-lobed, deciduous. Petals 5, inserted on the throat of the calyx, convolute in the bud. Stamens 5, inserted on the tube of the calyx below the petals. Styles 3, distinct, simple, 2-cleft or 2-parted. Stigmas 3 or 6, many-parted. Placentæ 3, parietal. Capsule loculicidally 3-valved, many-seeded. Seeds anatropous, arilled. Embryo in fleshy albumen. — Flowers sessile, or on bracted or jointed pedicels.

1. PIRIQUETA, Aublet.

Calyx campanulate. Styles 3, 2-cleft or deeply 2-parted. Stigmas 6, many-parted. Capsule opening to the base into 3 valves. — Herbs with stellate pubescence. Flowers on jointed pedicels, yellow.

1. **P. Caroliniana.** Hirsute with fulvous hairs, and stellate-tomentose; stem simple or sparingly branched; leaves lanceolate, obtuse, mostly serrate or toothed, nearly sessile; pedicels (at least the upper ones) longer than the leaves, often bibracteolate; petals obovate; styles 2-parted. (Turnera cistoides, *Ell.*) — Dry light soil, Florida to North Carolina. June – July. ♃ — Stem 1° high. Leaves 2′ – 3′ long, the lowest ones broader.

2. **P. tomentosa,** HBK. Stellate-tomentose throughout; stem simple; leaves nearly sessile, oblong, acute or obtuse, obscurely crenate, hoary beneath; pedicels shorter than the leaves — South Florida. — Stem 1° high. Leaves rather rigid, 1′ long.

3. **P. glabra,** Chapm. Stem slender, branching, smooth; leaves smooth, linear, entire, the floral ones small and bract-like; pedicels several times longer than the leaves, and, like the calyx, stellate-tomentose; petals spatulate; styles 2-cleft. (Turnera glabra, *DC.?*) — South Florida. — Stem 1° – 2° high. Leaves 2′ long. Flowers 1′ in diameter.

ORDER 63. PASSIFLORACEÆ. (PASSION-FLOWER FAMILY.)

Vines or trees, with alternate leaves, and perfect or diœcious flowers. — Calyx of 5 more or less united sepals. Corolla 5-petalled, monopetalous, or none. Stamens 5 or 10, separate or united, the anthers introrse. Fruit 1 or 5-celled, mostly pulpy and indehiscent. Placentæ parietal. Seed enclosed in a pulpy aril. Embryo in the axis of thin fleshy albumen. Cotyledons leafy.

Synopsis.

SUBORDER I. PASSIFLOREÆ. Climbing vines, with stipulate leaves, and axillary perfect flowers. — Calyx 5-parted, with a crown of filaments at the throat. Stamens 5, monadelphous around the stalk of the ovary. Styles 3. Fruit pulpy.

1. **PASSIFLORA.** Filaments of the crown separate. Petals 5, or none.

SUBORDER II. PAPAYÆ. Trees, with milky juice, palmately lobed exstipulate leaves, and diœcious flowers. — Staminate flowers monopetalous, panicled. Stamens 10. Pistillate flowers 5-petalled. Stigmas 5, sessile. Fruit baccate.

2. **CARICA.** Corolla of the staminate flowers salver-shaped, 5-lobed.

1 PASSIFLORA, L. PASSION-FLOWER. MAY-POP.

Calyx tube very short. Filaments of the crown in 2 or more rows. Fruit baccate. — Tendrils axillary. Peduncles jointed, 1-flowered.

1. **P. incarnata,** L. Leaves palmately 3-lobed, acute, serrate; petioles biglandular; peduncles 3-bracted; sepals with a horn-like point below the apex, whitish within; filaments of the crown in about 5 rows, the 2 outer ones as long as the sepals; berry large, oval. — In open or cultivated ground, common. June – July. ♃ — Fruit yellowish, as large as a hen's egg. Flowers purple and white.

2. **P. lutea,** L. Leaves cordate, broadly 3-lobed at the summit, with the lobes rounded and entire; petioles glandless; flowers small, greenish yellow; peduncles by pairs, bractless; filaments of the crown in 3 rows, shorter than the sepals. — Woods and thickets. June – July. ♃ — Fruit oval, purple, $\frac{1}{2}'$ in diameter.

3. **P. suberosa,** L. Leaves smooth, slightly fringed on the margins, 5-nerved at the base, divided above the middle into 3 ovate entire acute lobes, the middle lobe largest; petioles short, biglandular above the middle; peduncles commonly by pairs; flowers greenish; petals none; filaments of the crown shorter than the sepals, purple at the base; fruit purple. — South Florida.

4. **P. angustifolia,** Swartz. Lower leaves mostly 3-lobed, with the lobes lanceolate, obtuse, and entire; upper leaves simple, lanceolate, and acute; petioles short, biglandular; flowers small, solitary or by pairs, the peduncles short and bractless; petals none. — South Florida. — Stem 1°–2°

long. Leaves sometimes entire. Flowers 4″–6″ wide, yellowish. Berry purple, as large as a pea. Filaments of the crown in 2 rows. Stamens occasionally 4. Stipules subulate.

5. **P. pallida,** L. Leaves on short biglandular petioles; the lower ones 3 lobed, acute; the upper ovate or oblong, undivided; stipules subulate; peduncles commonly by pairs, about the length of the petioles; flowers very small; segments of the crown few, filiform, shorter than the calyx. — South Florida.

6. **P. multiflora,** L. Stem climbing high; leaves velvety-pubescent, ovate-oblong, entire, short-petioled; flowers small, in axillary clusters; involucre none. — Miami (*Garber*), Umbrella Key (*Curtiss*), South Florida. — Stem woody, climbing over the tallest trees. Leaves 2′–3′ long.

2. CARICA, L. CUSTARD APPLE.

Flowers diœcious. Corolla of the staminate flower salver-shaped, 5-lobed. Stamens 10, inserted on the throat of the corolla. Corolla of the pistillate flower 5-petalled. Lobes of the stigma lacerate. Fruit pulpy, many-seeded. — Trees, with simple stems, large long-petioled lobed leaves, and axillary flowers.

1. **C. Papaya,** L. Trunk simple, leafy at the top (10°–20° high); leaves mostly 7-lobed, broadly sinuate; staminate flowers panicled; pistillate flowers single or 2–3 together, and larger. — South Florida. — Flowers yellow.

ORDER 64. CUCURBITACEÆ. (GOURD FAMILY.)

Herbs, with succulent stems, climbing by means of lateral tendrils. Leaves alternate, palmately veined or lobed. Flowers axillary, monœcious or diœcious. — Calyx 5-toothed, adnate to the ovary. Corolla of 5 distinct or more or less united petals, coherent with the calyx. Stamens 3–5, free or variously united. Anthers long, straight or tortuous, commonly connate. Ovary 1–3-celled. Stigmas 3. Fruit (*pepo*) fleshy or pulpy, 1–3-celled. Seeds compressed, anatropous, without albumen. Cotyledons leafy.

Synopsis.

1. TRIANOSPERMA. Petals 5, distinct, or united at the base. Ovary 3-celled. Fruit 3-seeded, smooth.
2. MELOTHRIA. Petals 5, united into a campanulate corolla. Ovary 3-celled. Fruit many-seeded, smooth.
3. SICYOS. Petals 5, united at the base into a rotate corolla. Ovary 1-celled. Fruit 1-seeded, hispid.
4. ECHINOCYSTIS. Petals 6. Ovary 2-celled. Fruit 4-seeded.

1. TRIANOSPERMA, Torr. & Gray.

Flowers monœcious or diœcious. Calyx 5-toothed. Petals 5, distinct, or united at the base. Stamens 5, triadelphous: anthers tortuous. Style mostly 3-cleft. Fruit ovate or globose, smooth, few-seeded.

1. **T. Boykinii,** Roem. Rough-pubescent; leaves broadly cordate, 3-5-lobed; the lateral lobes entire or toothed, the middle one cuspidate; sterile and fertile flowers intermixed, 3-5 in a cluster, short-pedicelled; styles united; fruit 3-seeded; the seeds 3-toothed at the base. — River banks, Georgia, and westward. June-July. — Stems elongated. Flowers greenish white. Berry crimson.

2. MELOTHRIA, L.

Flowers polygamous or monœcious. Calyx of the fertile flower narrowed above the ovary; the sterile ones campanulate. Petals 5, united into a campanulate corolla. Stamens 5, triadelphous: anthers tortuous, connate, at length separate. Style single, with a cup-shaped disk surrounding its base. Stigmas 3. Fruit oval, smooth, many-seeded.

1. **M. pendula,** L. Stem filiform, smooth; leaves rough, cordate, with 3-5 angular-toothed lobes; sterile flowers in small racemes; the fertile solitary, on long peduncles; fruit oval, blackish, drooping. — Light soil, Florida to North Carolina, and westward. May-August. — Flowers small, yellow.

3. SICYOS, L.

Flowers monœcious. Calyx flattish, with 5 subulate or minute teeth. Petals 5, united below into a rotate corolla. Stamens 5, monadelphous or triadelphous. Ovary 1-celled, 1-ovuled. Style slender. Stigmas 3. Fruit membranaceous, bristly, 1-seeded. — Annual herbs. Sterile and fertile flowers mostly from the same axil.

1. **S. angulatus,** L. Plant hairy and clammy; leaves thin, cordate, with 3-5 acuminate denticulate lobes; sterile flowers racemose; the fertile ones in peduncled clusters, whitish. — River banks, Florida, and northward. June-August.

4. ECHINOCYSTIS, Torr. & Gray.

Flowers monœcious. Calyx 6-toothed. Petals 6, united at the base, spreading Stamens of the sterile flower 3, 2 of the anthers united. Fertile flower with a 2-celled ovary, and 2 erect ovules in each cell. Stigma broad. Fruit prickly, at length dry and bursting at the summit, fibrous within. Seeds large, flat. — Climbing herbs, with small greenish white flowers, the sterile numerous in long compound axillary racemes, with single or clustered fertile ones at its base.

1. **E. lobata,** Torr. & Gray. Annual, smoothish; leaves thin, acutely 5-lobed; fruit oval, 2′ long. — River banks, Tennessee. July.

The common GOURD or CALABASH (LAGENARIA VULGARIS, *Seringe*), originally from the tropics, is generally diffused over the Southern States, in waste places and around dwellings.

ORDER 65. CACTACEÆ. (CACTUS FAMILY.)

Succulent, shrubby, and commonly leafless and prickly plants, with globular, or columnar and angular, or flattened and jointed stems, and solitary sessile flowers. — Sepals and petals similar, imbricated in several rows, and adherent to the 1-celled ovary. Stamens indefinite, with long filaments, inserted on the base of the petals. Style single: stigmas numerous. Fruit baccate. Seeds numerous, campylotropous, borne on several parietal placentæ. Albumen scanty or none.

1. CEREUS, Haw.

Sepals and petals united into an elongated tube above the ovary. Stamens inserted on the tube. Style filiform. Stigma many-lobed. Seeds without albumen. — Stems elongated, ribbed or angled; the angles bearing tufts of spines and showy flowers.

1. **C. monoclonos,** DC. Stem tall, columnar, 6 – 8-angled, green; angles obtuse; spines short, brownish. — Key West. — Stem 4° – 10° high. Flowers 6′ long, the inner petals lanceolate, acuminate, white; the outer ones linear, greenish, and gradually diminishing into the scales of the tube. Stigmas 10 or more, filiform, exserted. Stamens included

2. **C. triangularis,** Haw. Stem elongated, jointed, 3-sided, rooting at the joints; flowers greenish externally, white within, very large; fruit large, naked. — Key West. — Stem climbing over bushes. Joints 1° long.

2. OPUNTIA, Tourn. PRICKLY PEAR.

Sepals and petals not united into a tube. Stamens inserted into the base of the petals Style cylindrical. Stigma 3 – 8-lobed. Seeds with thin albumen. — Stems with flat or rarely cylindrical joints. Leaves fleshy, with tufts of bristly hairs and commonly strong spines in their axils, deciduous. Flowers large, yellow.

1. **O. Ficus-Indicus,** Haw. Stem erect, spreading · joints oval and obovate; leaves subulate, bristly in the axils, without spines; fruit bristly, obovate, red within, edible. — South Florida. May. — Joints 1° long.

2. **O. vulgaris,** Mill. Stem prostrate; joints obovate, pale; spines few and short; fruit nearly smooth. — Dry sandy soil, near the coast. June – July.

3. **O. Rafinesquii,** Engelm. Stems spreading; joints obovate or roundish, deep green; leaves large, spreading; spines stout, mostly marginal; flower buds acute; petals 10 – 12; stigmas 7 – 8. — Rocky or sandy soil, Tennessee, and westward.

4 **O. polyantha,** Haw. Stem erect; joints oblong; spines yellow, strong, unequal; flowers numerous around the summit of the joints; stigmas 6. — Key West, and waste places around Apalachicola, Florida. June.

5. **O. Pes-Corvi,** Leconte. Stems prostrate, diffuse; joints small (1′ - 3′), cylindrical or somewhat flattened, easily separable, spiny; spines by pairs, unequal, elongated; sepals and petals 8 – 12, cuneate; stigmas 4; fruit small, fleshy, bristly, 1 – 2-seeded. — Barren sandy places along the coast, Florida and Georgia. May. — Stems 1° – 2° long.

ORDER 66. FICOIDEÆ.

Herbs or shrubs, with simple exstipulate succulent leaves, polypetalous or apetalous flowers, capsular 2–several-celled fruit, with central placentæ, and curved or annular embryo enclosing mealy albumen. — A small order, represented here by two tribes or suborders.

Synopsis.

TRIBE I. **SESUVIEÆ.** Calyx 5-parted, free, or nearly so, from the 1–5-celled ovary. Corolla none. Stamens inserted on the calyx. Capsule circumscissile. — Seaside plants, with nearly opposite leaves, and small axillary flowers.

1. **CYPSELEA**. Sepals obtuse. Stamens 2–3. Style 2-parted. Capsule 1-celled.
2. **TRIANTHEMA.** Sepals mucronate. Stamens 5. Style entire. Capsule 1–2-celled.
3. **SESUVIUM.** Sepals mucronate. Stamens 5 or more. Styles 3–5. Capsule 3–5-celled.

TRIBE II. **MOLLUGINEÆ.** Calyx 5-sepalled. Corolla none. Stamens hypogynous. Capsule valvate. — Prostrate annual herbs, with whorled leaves, and axillary flowers.

4. **MOLLUGO.** Capsule 3-valved, 3-celled. Sepals white.

1. CYPSELEA, Turp.

Calyx 5-parted. Petals none. Stamens 1–3, alternate with the calyx lobes. Styles 2. Capsule circumscissile.

1. **C. humifusa,** Turp. Small, annual, decumbent, glabrous, branching; leaves nearly opposite, obovate or oval, dotted (1½″–2″ long), the petiole dilated and with membranous margins at the base; stipules laciniate; flowers axillary, small, greenish. — South Florida (*Blodgett*).

2. TRIANTHEMA, Sauvages.

Sepals 3. Stigmas 1 or 2. Capsule 1- or 2-celled, 1- or few-seeded. Otherwise, with the characters and habit of Sesuvium.

1. **T. monogyna,** L. Perennial; stem dichotomous, diffuse (2°–3° long); leaves opposite, obovate, subconnate by their dilated petioles; flowers axillary, sessile, purple within; stamens 5; stigma single; capsule 1-celled, 4–8-seeded. — Keys of South Florida (*Garber, Curtiss*).

3. SESUVIUM, L. SEA PURSLANE.

Sepals 5, free, united at the base, persistent, colored within. Petals none. Stamens 5, or numerous, inserted on the calyx. Styles 3–5. Capsule 3–5-celled, many-seeded, circumscissile. — Prostrate and fleshy maritime plants, with nearly opposite and entire leaves, and axillary purplish flowers.

1. **S. portulacastrum,** L. Leaves lanceolate and oblong, acute, on winged and clasping petioles; flowers pedicelled; sepals fleshy, lanceolate, mucronate, purple within; stamens numerous. — Sandy or muddy places along the coast. May–Dec. ♃ — Stems diffuse, creeping.

2. **S. pentandrum,** Ell. Leaves spatulate-obovate, obtuse, on slightly winged and clasping petioles; flowers sessile; sepals ovate-lanceolate; stamens 5 — Muddy saline coves, Florida to North Carolina. May–Nov. ①? — Stems (often erect) and flowers smaller than in the preceding.

4. MOLLUGO, L.

Sepals 5. Petals none. Stamens 5 and alternate with the sepals, or 3 and alternate with the cells of the ovary. Styles 3, short. Capsule 3-valved, 3-celled, many-seeded. — Prostrate diffusely-branched annuals. Leaves whorled. Flowers white, on slender axillary peduncles.

1. **M. verticillata**, L. Smooth; leaves spatulate-lanceolate, unequal, in whorls of 4–8; fruiting peduncles reflexed; stamens 3. — Cultivated ground, common. Introduced. May–August.

ORDER 67. UMBELLIFERÆ. (PARSLEY FAMILY.)

Herbs, with chiefly hollow and furrowed stems, alternate mostly compound leaves, with dilated or clasping petioles, and umbelled flowers. Calyx tube coherent with the ovary; the limb 5-lobed or obsolete. Petals 5, mostly incurved, inserted with the 5 stamens on the edge of the disk that crowns the ovary. Styles 2. Fruit composed of 2 indehiscent carpels (*mericarps*), suspended from a filiform axis (*carpophore*), and cohering by their inner face (*commissure*); each furnished with 5 primary ribs, and often with as many secondary ones; the intervening spaces (*intervals*) usually containing channels (*vittæ*), which are filled with aromatic oil. Seed solitary, suspended. Embryo minute, at the base of horny albumen. — Umbels and partial umbels (*umbellets*) commonly subtended by an involucre or involucel.

Synopsis.

SUBORDER I. ORTHOSPERMEÆ. Albumen of the seed flat and straight on the inner face, not convolute nor involute.

* Umbels simple or proliferous.

TRIBE I. **HYDROCOTYLEÆ.** Fruit naked, laterally compressed, or globose. Umbels axillary. Petals entire. Stems creeping.

1. HYDROCOTYLE. Vittæ none. Fruit compressed. Leaves orbicular or ovate.
2. CRANTZIA. Vittæ 5. Fruit globose, corky. Leaves linear.

TRIBE II. **SANICULEÆ.** Fruit bristly or scaly, globose or turbinate. Umbels capitate, cymose.

3. SANICULA. Fruit bristly, globose. Vittæ numerous. Flowers polygamous.
4. ERYNGIUM. Fruit scaly or granulate, turbinate. Vittæ 5. Flowers perfect.

* * Umbels compound or perfect.

TRIBE III. **AMMINEÆ.** Fruit laterally compressed, or nearly globose. Carpels with 5 equal linear ribs, terete, or rounded on the back, wingless.

+ Flowers yellow.

5. PIMPERNELLA. Leaves ternately divided. Vittæ numerous.
6. BUPLEURUM. Leaves entire, perfoliate. Vittæ mostly none.

+ + Flowers white.

7. CICUTA. Fruit subglobose. Carpels with single vittæ in the intervals. Perennial.
8. APIUM. Fruit ovate or globose. Carpels with single vittæ. Annuals.

9. LEPTOCAULIS. Fruit ovate, tuberculate or bristly. Carpels with single vittæ.
10. DISCOPLEURA. Fruit ovate or globose. Carpels with corky margins and single vittæ.
11. CRYPTOTÆNIA. Fruit oblong. Carpels with single vittæ in the intervals, and under the ribs. Rays unequal. Perennial.
12. SIUM. Fruit ovate. Ribs corky. Vittæ several in each interval.

TRIBE IV. **SESELINEÆ.** Fruit terete, the cross section circular. Carpels 5-ribbed or 5-winged, the lateral ribs on the margin.

13. THASPIUM. Vittæ single. Carpels winged. Flowers yellow.
14. ZIZIA. Vittæ single. Carpels wingless, fruit compressed.
15. LIGUSTICUM. Vittæ numerous in the intervals, and on the inner face. Carpels sharply ribbed. Perennial. Flowers white.
16. CYNOSCIADIUM. Vittæ single. Carpels with corky ribs. Flowers white.

TRIBE V. **ANGELICEÆ** & VI. **PEUCEDANEÆ.** Fruit dorsally compressed, wing-margined. Carpels 5-ribbed or 5-winged, the marginal ribs broader than the dorsal ones.

+ Margins of the fruit doubly winged. Flowers white.

17. ANGELICA. Leaves ternately compound, the leaflets coarse.
18. CONIOSELINUM. Leaves pinnately compound, the leaflets fine.

+ + Margins of the fruit single-winged. Intervals with single vittæ (except the last), and 2–6 on the inner face of the carpels.

19. TIEDEMANNIA. Leaves pinnate, ternate, or rush-like. Flowers white.
20. HERACLEUM. Leaves large, ternately compound. Flowers white, large.
21. POLYTÆNIA. Leaves bipinnate. Flowers yellow. Fruit margins corky.

TRIBE VII. **CUMMINEÆ** & VIII. **DAUCINEÆ.** Fruit wingless. Carpels 5-ribbed, and with as many secondary ones. Vittæ single under the ribs.

22. TREPOCARPUS. Carpels naked, the 4 secondary ones prominent, corky.
23. DAUCUS. Carpels armed with 4 rows of barbed prickles.

SUBORDER II. CAMPYLOSPERMEÆ. Inner face of the seed longitudinally grooved.

TRIBE IX. **SCANDICINEÆ** & X. **SMYRNIEÆ.** Fruit laterally compressed.

24. CHÆROPHYLLUM. Fruit oblong, smooth. Vittæ single. Umbel few-rayed.
25. OSMORRHIZA. Fruit clavate, bristly. Vittæ none.
26. EULOPHUS. Fruit ovate. Vittæ numerous Perennial.

SUBORDER III. CŒLOSPERMEÆ. Inner face of the seed incurved at both ends.

TRIBE XI. **CORIANDREÆ.** Fruit globular or twin, wingless.

27. ERIGENIA. Fruit twin. Vittæ several in the intervals.
28. CORIANDRUM. Fruit globular. Vittæ none.

1. HYDROCOTYLE, Tourn. MARSH PENNYWORT.

Calyx teeth obsolete. Petals not incurved. Fruit laterally compressed. orbicular. Carpels 5-ribbed, the dorsal and lateral ones often obsolete, the intermediate ones enlarged. Vittæ none. — Low marsh herbs, with slender creeping stems, and peltate or reniform leaves. Umbels small, axillary. Flowers white.

1. **H. Americana,** L. Smooth; leaves orbicular-reniform, crenately 7-lobed; umbels sessile, 3 – 5-flowered; fruit 2-ribbed. — Mountains of North Carolina. July. — Stems stoloniferous. Leaves very thin, glossy.

2. **H. umbellata,** L. Smooth; leaves orbicular, peltate, obscurely lobed, crenate; umbels globose, on peduncles commonly longer than the petioles; fruit 2-ribbed on each side. — Wet places. May. — Leaves 1′ wide.

3. **H. ranunculoides,** L. Smooth; leaves orbicular-reniform, crenately 3 – 5 lobed; umbels few-flowered, on peduncles much shorter than the petioles, mostly nodding in fruit; fruit obscurely ribbed. — Springs and muddy places. May – June. — Petioles 6′ – 12′ long. Peduncles 1′ long.

4. **H. interrupta,** Muhl. Smooth; leaves orbicular, peltate, crenate; umbels proliferous, the nearly sessile clusters forming an interrupted spike; fruit strongly ribbed. — Wet places. June. — Petioles longer than the peduncles.

5. **H. repanda,** Pers. Pubescent; leaves broadly ovate, truncate or slightly cordate at the base, glandular-serrate; umbels capitate, few-flowered, shorter than the petioles; fruit strongly ribbed. — Low grounds. July.

2. CRANTZIA, Nutt.

Calyx teeth obsolete. Petals roundish. Fruit globular. Carpels 5-ribbed, the lateral ribs thickened and corky. Vittæ single in the intervals, with 2 on the commissure. — Small creeping marsh herbs, with fleshy linear leaves, and small whitish flowers in axillary umbels.

1. **C. lineata,** Nutt. (Hydrocotyle lineata, *Michx.*) — Muddy banks, near the coast. July. — Leaves 1′ long, with cross partitions, narrowed towards the base, obtuse. Involucre 5 – 6-leaved.

3. SANICULA, Tourn.

Calyx 5-toothed, persistent. Fruit globose, without ribs, armed with hooked prickles; the carpels not separating spontaneously, each with 5 vittæ. — Perennial erect branching herbs, with palmately divided long-petioled leaves, and polygamous flowers in small heads, disposed in a loose expanding cyme.

1. **S. Marilandica,** L. Leaves 5 – 7-parted, the divisions lobed and toothed; heads many-flowered; sterile flowers numerous on slender pedicels; styles long, recurved. — Dry woods. May. — Stem 2° – 3° high.

2. **S. Canadensis,** L. Leaves 3 – 5-parted, the divisions lobed and toothed; heads few-flowered; the sterile flowers (1 – 3) nearly sessile; styles short and straight. — Dry woods, common. May. — Stem 1° – 2° high. Branches of the cyme long and spreading.

4. ERYNGIUM, Tourn. BUTTON SNAKEROOT.

Calyx 5-lobed. Styles long and slender. Fruit short, turbinate, granulate or scaly, the ribs obsolete. Vittæ 5, 2 dorsal and 3 on the commissure. — Smooth herbs. Leaves often with cartilaginous margins, and spiny serratures, the floral ones opposite or whorled. Flowers blue or white, closely sessile in cymose bracted heads, the lower bracts empty and involucrate.

* *Stems erect: heads in a terminal leafy cyme.*

+ *Leaves parallel-veined: spinulose-ciliate.*

1. **E. yuccæfolium,** Michx. (BUTTON SNAKEROOT.) Stem stout, 2° - 4° high; leaves linear lanceolate, 1° - 2° long, the ciliæ single; involucre 7 - 8-leaved, shorter than the ovate head; bracts cuspidate, entire. — Woods and margins of fields, in the middle and upper districts. July. — Flowers whitish.

Var. **synchætum,** Gray. Stem slender, 1° - 2° high; leaves narrower, the ciliæ 2 - 3 together. — Sandy pine barrens in the lower districts. July.

2. **E. longifolium,** Cav. Stem slender, 2° - 3° high; leaves linear, as long as the stem, the ciliæ few and remote; heads long-peduncled, globose, ½′ - ¾′ long, twice as long as the involucre; bracts ovate, cuspidate, entire. — Manatee, South Florida (*Simpson*).

+ + *Veins of the leaves diverging or reticulate: petioles crossbarred (except No.* 9).

3. **E. Floridanum,** Coulter & Rose. Stem mostly simple, 2° - 3° high; lower leaves long-petioled, ovate or oblong, rarely cordate, the floral ones 3-parted, toothed; leaves of the involucre 10 - 13, 1 - 2-toothed, or entire, about as long as the ovoid head; bracts linear-subulate, entire; flowers blue. — South Florida.

4. **E. virgatum,** Lam. Leaves short, oblong or oblong-ovate, serrate, the upper ones toothed or divided; leaves of the involucre entire, or with 2 - 4 bristly teeth, longer than the head; bracts 3-toothed. (E. ovalifolium, *Michx.*) — Pine barren swamps. August. — Stem 1° - 2° long. Leaves 2′ - 3′ long, sometimes cordate. Flowers blue.

Var. **Ludovisianum,** Morong. Stem slender, 2 high, branching; lower leaves lanceolate, denticulate, 2′ long, the upper linear; involucre twice as long as the small (3″ - 4″ wide) globose head. — Louisville, Georgia (*Hopkins, Elliott*), and westward.

5. **E. Ravenelii,** Gray. Leaves linear, elongated, nearly terete, grooved on the upper surface, obscurely denticulate; leaves of the involucre 3-cleft, as long as the head; bracts equally 3-cleft, spine-pointed, longer than the mucronulate calyx lobes. — Marshes, Florida to South Carolina. Sept. - Oct. — Stem 1½° - 3° high. Flowers blue.

6. **E. Mettaueri,** Wood. Mostly taller (3° - 6° high); radical leaves broadly linear, flat, obscurely denticulate, the petiole prominently crossbarred; stem leaves more strongly denticulate; leaves of the involucre mostly longer than the head, pale or bluish above; flowers blue. — Fresh marshes along the west coast of Florida. July - August.

7. **E. Virginianum,** Lam. Stem slender, 1° - 2° high; lowest leaves linear lanceolate, long-petioled, flat, incurved-serrate or entire, the upper spinulose; involucre as long as the head; bracts unequally toothed, the middle tooth as long as the slender-pointed calyx lobes; flowers pale blue or whitish — Margins of ponds and streams. July - August.

8. **E. præaltum,** Gray. Leaves lanceolate, flat, veiny, serrate; the upper ones linear, spiny-toothed; leaves of the involucre 2–3 times as long as the head; bracts tricuspidate, barely as long as the mature calyx. (E. Virginianum, *Ell.*) — Fresh marshes near the coast, Georgia to North Carolina. August. — Stem 4°–6° high. Lowest leaves 1°–2° long and 2½′–3′ wide. Flowers white.

9. **E. aromaticum,** Baldw. Stems clustered, prostrate, very leafy; leaves spatulate, pinnately lobed, cartilaginous on the margins; the 3 upper lobes broad and spine-pointed, the lower ones scattered and bristle-like; leaves of the involucre 3-cleft, longer than the globose head; bracts 3-toothed. — Dry pine barrens, East and South Florida. Sept. — Stems 1° long.

* * *Stems prostrate or spreading, filiform: heads small, on solitary axillary peduncles: flowers blue.*

10. **E. prostratum,** Nutt. Stems several, prostrate, branching; leaves thin; the earliest ones ovate or oblong, sharply serrate or toothed, long-petioled, the others 3-parted, with the middle segment lanceolate and commonly 3-toothed; involucre longer or shorter than the oblong head; bracts spatulate, obtuse, barely exceeding the calyx. — Low sandy pine barrens, Georgia, Florida, and westward. Sept. — Stems ½°–1½° long.

11. **E. Baldwinii,** Spreng. Stems single, diffusely branched above; leaves lanceolate or oblong, entire, or sparingly toothed, long-petioled, the floral ones sessile, 3-parted, with the segments linear or filiform and entire; involucre as long as the hemispherical head; bracts subulate, acute, twice as long as the calyx. — Damp sandy soil along the coast, Georgia, and westward. July–August. ② — Stems 1°–2° long. Leaves somewhat fleshy. Flowers very small.

5. PIMPERNELLA, L.

Calyx teeth obsolete. Fruit ovoid-oblong, twin. Carpels 5-ribbed, the cross section nearly orbicular. Vittæ 3 in each interval, and 4 on the commissure. — Smooth perennial herbs, with 2–3-ternately compound leaves, and yellow flowers.

1. **P. integerrima,** Benth. & Hook. Stem slender; leaflets oblong-ovate, entire; rays of the umbel long and slender; involucre none. (Smyrnium integerrimum, *L.*) — Rocky woods, Mississippi, and northward. May–June. — Stem 1°–2° high.

6. BUPLEURUM, Tourn.

Calyx teeth obsolete. Fruit flattened at the sides, or twin, ovate-oblong. Carpels 5 ribbed, the intervals with or without vittæ. — Smooth herbs, with entire simple leaves, and yellow flowers.

1. **B. rotundifolium,** L. Leaves ovate, perfoliate; umbel 5-rayed; involucre none; leaves of the involucel 5, ovate, mucronate. — Waste ground. Sparingly introduced.

7. CICUTA, L. WATER HEMLOCK.

Calyx 5-toothed. Fruit roundish. Carpels with 5 flattish equal ribs; the intervals with single vittæ, and 2 on the inner face. — Smooth perennial marsh herbs, with hollow stems, and twice pinnately or ternately divided leaves. Involucels many-leaved. Flowers white.

1. **C. maculata,** L. Stem large (3° – 6° high), purplish; leaflets ovate-lanceolate, acute, coarsely serrate; umbels large, many-rayed. — Marshes and river banks. July. — Plant very poisonous.

8. APIUM, L.

Calyx teeth 5, or obsolete. Fruit ovate or oblong, flattened on the sides, the carpels equally 5-ribbed. Intervals with single vittæ. Flowers white.

1. **H. nodiflorum,** Koch. Stems prostrate or creeping; leaves pinnate; leaflets ovate-lanceolate, serrate; umbels short-peduncled, opposite the leaves; involucre 1 – 2-leaved or none; involucel 5 – 6-leaved. — Ditches, etc. around Charleston. Introduced. April – June. — Stems 2° long.

2. **H. leptophyllum,** DC. Stem erect or diffuse; leaves ternately or biternately divided, the divisions linear or setaceous; umbels nearly sessile, 1 – 3-rayed; involucre and involucel none; fruit ovate. — East Florida, and westward. Introduced. — Stem ½° – 2° high. Fruit very small.

9. LEPTOCAULIS, Nutt.

Calyx teeth obsolete. Fruit ovate, compressed on the sides, often rough or bristly. Carpels 5-ribbed, the intervals with single vittæ, and 2 on the face. — Slender smooth herbs, with finely dissected leaves, and white flowers. Umbels few-rayed. Involucre none. Involucel few-leaved.

1. **L. divaricatus,** DC. Annual; stem (6′ – 18′ high) widely branched; leaves 2 – 3-pinnatifid, with the divisions filiform; umbel 3 – 4-rayed. (Sison pusillum, *Michx.*) — Dry sandy soil, Florida to North Carolina. April. — Fruit very small, roughened with minute scales.

2. **L. echinatus,** Nutt. Leaves, etc. as in the preceding, but the fruit beset with rigid spreading hooked bristles. — Mobile (*Mohr*), and westward.

10. DISCOPLEURA, DC.

Calyx teeth subulate, persistent. Fruit ovate; the carpels strongly 3-ribbed on the back, and with two lateral ribs united with a thick corky margin. Intervals with single vittæ. — Smooth annuals, growing in marshes. Leaves pinnately dissected, with the filiform divisions often whorled. Involucre and involucel conspicuous. Flowers white.

1. **D. capillacea,** DC. Umbels 3 – 10-rayed; leaves of the involucre mostly 3 – 5-cleft; fruit ovate. (Ammi capillaceum, *Michx.*) — Brackish marshes, Florida to Mississippi, and northward. June – July. — Stem 1° – 2° high, much branched. Earliest leaves simple, or simply pinnate.

2. **D. Nuttallii,** DC. Umbels many-rayed; leaves of the involucre 5 – 6, entire; fruit globose. — Low ground, Florida, Georgia, and westward. — Stem 2° – 6° high.

11. CRYPTOTÆNIA, DC.

Calyx teeth obsolete. Fruit oblong, contracted at the sides. Carpels equally 5-ribbed, with very slender single vittæ in each interval, and one under each rib. — A smooth perennial herb, with trifoliolate leaves on long petioles. Leaflets large, ovate, doubly serrate and mostly lobed. Rays of the umbel few and very unequal. Involucre none. Involucels filiform. Flowers white.

1. **C. Canadensis,** DC. — Rich shady soil, chiefly in the upper districts July. — Stem 2° high.

12. SIUM, L.

Calyx teeth small or obsolete. Fruit ovate or globular, flattened at the sides; the carpels with 5 equal corky ribs. Intervals usually with several vittæ. — Marsh or aquatic perennial herbs. Leaves pinnate; the immersed ones dissected into numerous capillary divisions. Involucre several-leaved. Flowers white.

1. **S. lineare,** Michx. Leaflets varying from linear to oblong, finely and sharply serrate; calyx teeth minute, fruit globular, strongly ribbed. — Along streams, commonly in water, West Florida and North Carolina. Rare. July. — Stem 2° high.

13. THASPIUM, Nutt.

Calyx 5-toothed. Fruit ovoid or oblong, nearly terete, the carpels 5-winged Vittæ single in the intervals and two on the commissure. — Perennial herbs, with 1–3-ternately divided leaves, or the lower ones entire, and yellow (rarely purple) flowers. Involucre none. Fruit all pedicellate.

1. **T. aureum,** Nutt. Glabrous; stem sparingly branched, 1°–3° high; radical leaves simple, cordate; stem leaves ternate, the leaflets oblong-lanceolate, sharply serrate; flowers yellow or (in var. atropurpureum, *C. & R.*) dark purple; fruit ovoid, 2″ long, the ribs winged. — Dry open woods. May–July.

2. **T. barbinode,** Nutt. Stem 2°–3° high, widely branching, pubescent at the joints; leaves mostly 2–3-ternate, the leaflets thin, ovate or ovate-lanceolate, coarsely serrate and often lobed; flowers yellow; fruit elliptical, 3″ long, with three of the ribs more narrowly winged. — Woods and rocky banks, chiefly in the upper districts. May to July.

Var. **pinnatifidum,** C. & R. More or less pubescent; leaflets small (½′ long), coarsely toothed; fruit smaller, puberulent. — Rocky banks of the Chipola River, West Florida. June.

3. **T. pinnatifidum,** Gray. Branches and umbels roughish-puberulent; leaves 1–3-ternate; leaflets 1–2-pinnatifid, the lobes linear or oblong; fruit oblong, narrowly 10-winged, 2″ long, the intervals minutely scabrous. — Mountains of North Carolina and Tennessee. — Stem 2°–3° high.

14. ZIZIA, Koch.

Habit and most of the characters of Thaspium, but the fruit laterally compressed, wingless, and the central one of each umbellet sessile. Flowers yellow.

1. **Z. aurea,** Koch. Glabrous, 2° - 3° high; leaves 1 - 3-ternate, the lowest long-petioled; leaflets ovate or ovate lanceolate, sharply serrate; rays stout, 15 - 25; fruit oblong, 2″ long. — Woods and low ground. May - July.

Var. **Bebbii,** C. & R. More slender; leaflets coarsely serrate; rays fewer; fruit smaller, oval. — Mountains of North Carolina and Georgia.

2. **Z. cordata,** DC. Stem 2° - 3° high; lowest leaves simple, cordate, crenate, the upper ternate, sharply serrate, lanceolate; fruit ovate, 1½″ long. — Copses and open woods. May - June.

15. LIGUSTICUM, L. NONDO.

Calyx teeth minute or obsolete. Fruit elliptical, nearly terete. Carpels with 5 acute equal and somewhat winged ribs. Vittæ numerous. Involucre short, 2 - 6-leaved. — Perennial herbs. Leaves 1 - 3-ternately divided. Flowers white.

1. **L. actæifolium,** Michx. Stem tall (3° - 6°), smooth, branched; leaves 3-ternately divided; leaflets ovate, toothed; umbels very numerous, panicled; fruit ovate-oblong, the ribs wing-like: vittæ 3 in each interval, and 6 on the commissure. — Rich soil, in the upper districts. July - August. — Root large, aromatic.

16. CYNOSCIADIUM, DC.

Calyx teeth subulate. Fruit ovate, terete. Carpels with 5 obtuse ribs, the two lateral ribs united with the thick corky margin. Intervals with single vittæ. — Smooth annuals, with finely divided leaves, and very small white flowers. Leaves of the involucre few or none.

1. **C. pinnatum,** DC. Leaves pinnately divided into few long linear segments; petals roundish, obtuse; fruit ovate-oblong, the ribs not prominent. — Alabama (*Prof. E. A. Smith*), and westward. August. — Stem 6′ - 12′ high. Lowest leaves often entire.

2. **C. digitatum,** DC. Leaves palmately 3 - 5-parted, segments linear; calyx teeth prominent; fruit contracted at the top, strongly ribbed. — Alabama, and westward. — Stem 1° - 2° high.

17. ANGELICA, L.

Calyx teeth obsolete. Fruit flattened. Carpels 5-ribbed, the 2 lateral ribs dilated into wings. Vittæ 1 - 6 in each interval, and 2 - 10 on the commissure. — Chiefly perennial herbs, with compound leaves, no involucre, and white flowers.

* *Vittæ single in each interval.*

1. **A. Curtisii,** Buckley. Stem smooth; leaves twice ternate, or the divisions quinate; leaflets thin, ovate or ovate-lanceolate, often slightly cordate, sharply toothed; fruit broadly winged; commissure with 2 vittæ. — High mountains of North Carolina. August. — Stem 3° high. Petioles large and sheathing.

* * *Vittæ* 3 – 6 *in each interval.*

2. **A. hirsuta,** Torr. & Gray. Upper part of the stem and umbels softly pubescent; leaflets oblong-ovate, sharply serrate; fruit pubescent. — Dry hills, Florida to Tennessee, and northward. July. — Stem 2° – 3° high.

3. **A. dentata,** Chapm. Stem slender, smooth; umbels slightly pubescent; leaflets lanceolate, strongly veined, coarsely toothed; fruit smooth. — Dry pine barrens, Florida. Sept. — Stem 2° – 3° high, branching above; teeth of the small (½′) leaflets spreading.

18. CONIOSELINUM, Fischer.

Calyx teeth obsolete. Fruit oval. Carpels somewhat flattened on the back, 5-winged, with the lateral wings twice as broad as the dorsal ones. Vittæ 2 – 3 in each interval, and 4 – 8 on the commissure. — Smooth herbs. Leaves thin, finely 2 – 3 pinnately compound. Involucre none. Involucels subulate. Flowers white.

1. **C. Canadense,** Torr. & Gray. Leaflets pinnatifid, with linear-oblong lobes, the petioles inflated; rays of the umbel slender; fruit broadly oval. — High mountains of North Carolina. August. — Stem 3° – 5° high.

19. TIEDEMANNIA, DC.

Calyx 5-toothed. Fruit oval or obovate, flattened on the back. Carpels with 5 slender obtuse ribs, winged on the margins. Intervals with single vittæ, and 2 – 6 on the commissure. — Smooth herbs, from tuber-bearing roots, and white flowers. Involucre few-leaved or none. Involucel few- or many-leaved.

1. **T. rigida,** C. & R. Leaves pinnate; the leaflets (3 – 9) varying from linear to oblong, variously toothed or entire. — Swamps. August – Sept. — Stem 2° – 5° high.

2. **T. ternata,** C. & R. Leaves ternate, with the leaflets linear, entire and strongly nerved; the lowest ones on very long petioles. — Low or swampy pine barrens, Florida to North Carolina. Nov. — Stem slender, 2° high. Petioles of the lower leaves 1° or more long.

3. **T. teretifolia,** DC. Leaves reduced to rush-like petioles, the lowest equitant; involucre and involucel each 5 – 6-leaved. — Wet pine barrens, in the lower districts. August – Sept. Stem 2° – 4° high.

20. HERACLEUM, L.

Calyx teeth minute. Fruit oval, flat. Carpels with the 2 lateral ribs distant from the 3 dorsal ones, and near the dilated margins. Vittæ shorter than the carpels, single in the intervals, and usually 2 on the commissure. — Stout perennial herbs, with pinnately or ternately divided or lobed leaves on inflated petioles, and white flowers. Involucre few-leaved. Involucel many-leaved. Marginal flowers commonly larger and radiant.

1. **H. lanatum,** Michx. Villous; leaves very large, ternate; leaflets broadly cordate, deeply lobed, hoary beneath. — Mountains of North Carolina. June. — Stem 4° – 8° high, strongly furrowed.

21. POLYTÆNIA, DC.

Calyx 5-toothed. Fruit oval, compressed, the margins thickened; carpels obscurely ribbed, with two vittæ in the intervals, and six on the commissure. — A smooth biennial ? herb, with pinnately divided leaves, and yellow flowers.

1. **P. Nuttallii,** DC. Stem erect from a thick tap-root, 1° – 3° high; leaves 2 – 3-pinnate, with coarse toothed lobes, the upper opposite, 3-parted: involucre none; involucels bristly. — Alabama, Tennessee, and westward. April.

22. TREPOCARPUS, Nutt.

Calyx teeth subulate, deciduous. Fruit linear oblong, acute, nearly terete, 8-angled; carpels 4-ribbed, each rib covering a single vitta. Commissure spongy, grooved in the middle, with two minute vittæ next the seed. — A smooth annual, with 3-pinnately finely dissected leaves, and 3 – 5-rayed long-peduncled umbels.

1. **T. Æthusa,** Nutt. — Low banks near Mobile (*Mohr*). — Stem 2° high. Peduncles longer than the leaves. Flowers white.

23. DAUCUS, Tourn. CARROT.

Calyx 5-toothed. Corolla irregular. Fruit ovate or oblong. Carpels with 3 primary inconspicuous ribs, ciliate on the back, and one at each margin within, and 4 secondary wings divided into barbed prickles, with a single vitta under each, and 2 on the inner face. — Annual or biennial herbs, with 2 – 3 pinnately finely divided leaves, many-leaved involucres and involucels, and white or yellowish flowers. Fruiting umbels concave at the top.

1. **D. Carota,** L. Stem 2° – 4° high, hirsute; fruit oblong; wings of the carpels divided to the base into 12 or more bristly prickles. — Waste places. Introduced.

2. **D. pusilla,** Michx. Stem ½° – 2° high, bristly; fruit oblong-ovate; wings of the carpels deeply parted into 6 – 8 flattened prickles; umbel 1′ – 2′ wide. — Sandy old fields. May – June.

24. CHÆROPHYLLUM, L.

Calyx teeth obsolete. Fruit oblong or linear, tapering at the apex, contracted at the sides. Carpels deeply furrowed on the commissure, with 5 obtuse equal ribs. Intervals with single vittæ. — Herbs, with compound finely dissected leaves, and white flowers. Involucre few-leaved or none. Involucel many-leaved.

1. **C. procumbens,** Lam. Stem weak, slightly pubescent; leaves ternately divided; the divisions bipinnatifid, with oblong obtuse lobes; umbel sessile, of 2 – 3 long rays; involucel 4 – 5-leaved, few-flowered; fruit oblong, abruptly pointed, finely ribbed. — Shady river banks. April – May. ① or ② — Stems 6′ – 18′ long.

2. **C. Teinturieri,** Hook. & Arn. More pubescent; lobes of the leaves narrower and acute; fruit oblong-linear, more strongly ribbed and tapering at the apex; otherwise like the last. — Banks of the Apalachicola River, Florida, and westward. March – April. — Stem erect, 1° high.

25. OSMORRHIZA, Raf.

Calyx teeth obsolete. Fruit clavate, angled. Carpels with bristly ribs, furrowed on the commissure. Vittæ none. — Perennial herbs with aromatic roots. Leaves 2-ternate, with the leaflets ovate, toothed or serrate. Umbels opposite the leaves. Involucre and involucel 2 – 5-leaved. Flowers white.

1. **O. brevistylis,** DC. Styles very short, conical; fruit somewhat tapering at the apex. — Mountains of North Carolina and northward. June. — Plant hairy, 1° – 1½° high. Leaflets thin, acuminate, pinnatifid.

2. **O. longistylis,** DC. Stem 1° high, from a sweet anise-scented root; leaves mostly 3, the leaflets thin, ovate, lobed and toothed, the lowest long-petioled; umbel and its 3 rays long and slender; styles nearly as long as the ovary; fruit mostly curved. — Shaded river banks, North Georgia, and northward. April.

26. EULOPHUS, Nutt.

Calyx 5-toothed. Fruit ovate, laterally contracted, indistinctly ribbed. Vittæ large, numerous, with 4 on the concave face. — A tall (3° – 4°) glabrous perennial, with biternately divided leaves, and long-stalked many-rayed umbels of white flowers. Involucre 1 – 2-leaved. Involucel many-leaved.

1. **E. Americanus,** Nutt. — Tennessee, and westward.

27. ERIGENIA, Nutt.

Calyx teeth obsolete. Petals obovate. Fruit didymous, the carpels kidney shaped, incurved at each end, with 5 slender ribs; intervals with several vittæ. — A low (6′ – 10′ high) smooth herb from a deep round tuber; the simple stem bearing 2 – 3-ternately finely dissected leaves, and a small leafy-bracted compound umbel of white flowers.

1. **E. bulbosa,** Nutt. — Mountains of Georgia and Tennessee. April.

28. CORIANDRUM, Hoff. CORIANDER.

Calyx 5-toothed. Fruit globose, 10-ribbed, the primary ribs inconspicuous, flexuous, without vittæ. — Chiefly annual herbs, with bipinnately divided leaves and white flowers.

1. **C. sativum,** L. Glabrous, 2° high; divisions of the leaves linear; umbel spreading. — Waste ground. Introduced.

ORDER 68. ARALIACEÆ. (GINSENG FAMILY.)

Umbelliferous herbs, shrubs, or trees, nearly as in the last order; but the flowers (chiefly polygamous) with flat and spreading petals, the styles and carpels of the baccate fruit usually more than two, and the embryo at the apex of copious fleshy albumen.

1. ARALIA, L. SARSAPARILLA.

Calyx teeth 5, or none. Petals, stamens, and spreading styles 5. Berry drupaceous, 5-lobed, 5-celled. — Herbs or shrubs. Leaves compound. Umbels corymbed or panicled. Flowers whitish. Berry black.

* *Stems herbaceous.*

1. **A. racemosa,** L. (SPIKENARD.) Stem smooth, leafy, widely branched; leaves ternately decompound; leaflets large, broadly cordate, doubly serrate; umbels very numerous, panicled. — Rich woods along the mountains. July. — Root thick, aromatic. Stem 3° – 5° high.

2. **A. hispida,** Michx. Stem leafy, somewhat shrubby at the base, bristly; leaves bipinnately compound; leaflets lanceolate ovate, sharply serrate; umbels in naked peduncled corymbs. — Mountains of North Carolina. June – July. — Stem 1° - 2° high.

3. **A. nudicaulis,** L. Stem naked, short, bearing 3 long-peduncled umbels at the apex; leaf solitary, radical, long-petioled, ternately divided, the divisions quinate; leaflets oblong-ovate, acuminate, serrate. — Mountains of North Carolina, and northward. May. — Root long and slender, aromatic. Stem 1° high, much shorter than the leaves.

* * *Stems woody.*

4. **A. spinosa,** L. (HERCULES'S CLUB.) Stem simple, prickly; leaves very large, crowded at the summit of the stem, bipinnately compound; leaflets thick, ovate, crenate, glaucous beneath; umbels in very large hoary panicles. — Swamps. July – August. — Stem 10° – 15° high.

2. PANAX, L. GINSENG.

Calyx minutely 5-toothed. Petals and stamens 5. Styles 2 – 3. Berry fleshy, drupaceous, 2 – 3-lobed, 2 – 3-celled. — Low herbs, with naked stems, bearing at the summit a single long-peduncled umbel of greenish flowers, surrounded by a whorl of three 3 – 7-foliolate leaves. Berry red or greenish.

1. **P. quinquefolium,** L. Root fusiform; leaflets 5 – 7, oblong-obovate, serrate, stalked; styles 2, berry crimson. — Rich woods along the mountains, Georgia, and northward. July. — Stem 1° high. Leaflets 2′ – 3′ long.

2. **P. trifolium,** L. Root globose; leaflets 3 – 5, lanceolate, serrate, sessile; styles 3; berry greenish. — With the last. — Plant 4′ - 6′ high.

ORDER 69. CORNACEÆ. (DOGWOOD FAMILY.)

Trees or shrubs, with simple, entire or rarely toothed exstipulate leaves, and perfect or polygamous flowers. — Calyx coherent with the 1 – 2-celled ovary, 4 – 5-toothed. Petals 4 – 5, valvate in the bud, sometimes wanting. Stamens 4 – 10, inserted into the margin of the disk that crowns the ovary. Ovules solitary, anatropous, pendulous. Fruit a berry-like 1 – 2-celled, 1 – 2-seeded drupe. Embryo nearly as long as the fleshy albumen. Cotyledons large and foliaceous.

1. CORNUS, Tourn. DOGWOOD, CORNEL.

Flowers perfect. Calyx 4-toothed. Petals and stamens 4. Stigma capitate. Drupe 2-celled, 2-seeded. — Shrubs or low trees. Leaves and branches opposite (except No. 1). Flowers in naked spreading cymes, or capitate, and subtended by a colored involucre.

* *Flowers white, in a loose open cyme: involucre none.*

1. **C. alternifolia,** L'Herit. Leaves oval, abruptly acute at each end, pale and pubescent beneath, long-petioled, and, like the greenish striped branches, alternate; drupes deep blue. — Banks of streams, Florida, and northward. May. — A widely branching shrub, or small tree.

2. **C. stricta,** Lam. Leaves ovate or oblong, abruptly acute or acuminate, smooth, whitish beneath; cymes flat or depressed at the summit; drupes and anthers pale blue. — Swamps, Florida to North Carolina, and westward. April. — A shrub or small tree. Branches brown.

3. **C. paniculata,** L'Herit. Leaves smooth, ovate-lanceolate, acuminate, paler beneath; cymes convex at the summit, somewhat panicled, loose-flowered; drupes white, depressed-globose. — North Carolina, and northward. May – June. — Shrub 4° - 8° high. Branches gray.

4. **C. sericea,** L. Leaves ovate or elliptical, smooth above, the lower surface, like the purplish branches and close depressed cyme, silky-pubescent; drupes pale blue. — Low woods. May. — Shrub 6° - 10° high.

5. **C. asperifolia,** Michx. Leaves short-petioled, lanceolate-ovate or oblong, acute, very rough on both sides, as well as the branchlets and flat cymes; drupes pale blue. — Dry woods, Florida to South Carolina, and westward. June. — A shrub or small tree. Branches slender and sometimes warty.

6. **C. stolonifera,** Michx. Stem erect or declining, with reddish purple shoots; leaves ovate, abruptly acuminate, closely pubescent, whitish beneath; cymes small, dense, smooth; drupes white. — Swamps and wet banks, Tennessee, and northward. May.

* * *Flowers capitate, subtended by a white 4-leaved involucre.*

7. **C. florida,** L. Leaves ovate-lanceolate or ovate, at length smooth on both sides; flowers greenish; drupes ovoid, red. — Oak woods, common. May. — A small tree. Wood hard and close-grained. Leaves of the involucre emarginate and thickened at the summit, showy.

2. NYSSA, L. Sour Gum.

Flowers diœcio-polygamous. Sterile flowers in many-flowered heads or cymes. Calyx 5-parted. Stamens 5 – 10. Petals and pistil none. Fertile flowers single or few in a head. Calyx limb 5-toothed or obsolete. Petals 5, minute, or wanting. Stamens 5 – 10, mostly sterile. Style long, revolute. Stigma decurrent. Ovary 1-celled. Drupe 1-seeded. — Trees or shrubs. Leaves alternate, entire or rarely toothed, finely reticulated. Flowers small, greenish, on axillary or lateral peduncles.

* *Sterile flowers in loose clusters.*

1. **N. sylvatica,** Marsh. Leaves oval or obovate, mostly acute, tomentose when young, at length shining above; fertile peduncles long and slender, 3 – 8-flowered; drupes ovoid, dark blue. — Rich upland woods, Florida to

Mississippi, and northward. May. — A tree 30° – 50° high, with widely spreading branches. Leaves rather thick, dark green, 2′ – 5′ long. Fertile peduncles 1½′ – 3′ long. Drupe ½′ long.

2. **N. Caroliniana,** Poir. Branches, leaves, etc. tomentose when young, at length nearly smooth; leaves short-petioled, varying from lanceolate to orbicular, obtuse, sometimes slightly cordate; peduncles short, the fertile ones 1 – 2-flowered; drupes oval, blue. — Ponds and swamps, in the lower districts. April – May. — A large tree, or in pine-barren swamps sometimes a mere shrub. Leaves 1′ – 2′ long. Peduncles ½′ – 1′ long. Drupe smaller than in the last.

3. **N. uniflora,** Walt. Leaves large, long-petioled, ovate or oblong, acute, entire or sharply toothed, tomentose beneath, the lower ones often cordate; fertile peduncles elongated, 1-flowered; drupes ovate-oblong, dark blue. — Deep swamps and ponds, middle and lower districts. April. — A large tree. Leaves 4′ – 6′ long. Drupe 8″ – 12″ long.

* * *Sterile flowers capitate.*

4. **N. capitata,** Walt. (OGEECHEE LIME.) Leaves large, short-petioled, oblong, oval, or obovate, mucronate or acute, tomentose beneath; flowers below the leaves, the fertile ones perfect, solitary, on very short peduncles; drupe oblong, red. — Swamps, Florida and Georgia, near the coast, and westward. — A small tree. Leaves 3′ – 5′ long. Drupe 1′ long, agreeably acid.

DIVISION II. MONOPETALOUS EXOGENOUS PLANTS.

Floral envelopes double, consisting of both calyx and corolla; the latter of more or less united petals.

ORDER 70. CAPRIFOLIACEÆ. (HONEYSUCKLE FAMILY.)

Chiefly trees or shrubs, with opposite leaves, and no stipules. Calyx tube adherent to the ovary, the limb 4 – 5-toothed or lobed. Corolla tubular or rotate, 4 – 5-lobed. Stamens as many as the lobes of the corolla, and alternate with them, inserted on its tube. Ovary 2 – 5-celled, with 1 – many pendulous ovules in each cell. Fruit mostly baccate or drupaceous. Seeds anatropous. Embryo small, in the axis of fleshy albumen.

Synopsis.

* Corolla tubular. Style slender. Stigma capitate.

1. SYMPHORICARPUS. Corolla campanulate. Berry 4-celled, 2-seeded. Erect shrubs.
2. DIERVILLA. Corolla funnel-shaped. Capsule 2-celled, 2-valved, many-seeded. Erect shrubs.
3. LONICERA. Corolla tubular. Berry 1 – 3-celled. Chiefly woody vines.
4. TRIOSTEUM. Corolla tubular. Drupe bony, 3 – 5-seeded. Herbs.

* * Corolla rotate. Stigmas 3–5, sessile. Flowers in cymes.

5. **SAMBUCUS.** Leaves pinnate. Berry 3–5-seeded.
6. **VIBURNUM.** Leaves simple. Drupe 1-seeded.

1. SYMPHORICARPUS, Dill. Snowberry.

Calyx tube globose, the limb 4–5-toothed, persistent. Corolla campanulate, nearly regular, 4–5-lobed. Stamens 4–5, inserted on the throat of the corolla. Ovary 4-celled, 2 of the cells with several abortive ovules, the other two with a single suspended fertile ovule in each. Berry 4-celled, 2-seeded. Seeds bony. — Erect shrubs with entire leaves, and white or reddish flowers in axillary spikes or clusters.

1. **S. vulgaris,** Michx. Leaves oval, downy beneath; flowers in small axillary clusters; corolla smoothish within; berries red. — Dry soil among the mountains, Georgia, and northward. July–Sept. — Shrub 2°–3° high.

2. DIERVILLA, Tourn.

Calyx oblong or cylindrical, narrowed above, with 5 subulate teeth. Corolla funnel-shaped, 5-lobed. Stamens 5. Capsule 2-celled, septicidally 2-valved, many-seeded. — Low shrubs, with ovate or oblong acuminate serrate deciduous leaves, and axillary and terminal cymose flowers.

1. **D. trifida,** Mœnch. Leaves ovate or oblong-ovate, distinctly petioled, pubescent, especially on the veins above; peduncles mostly 3-flowered; capsule ovoid-oblong, narrowed into a neck above. — Mountains of North Carolina. June. — Stem 2°–4° high. Flowers greenish yellow.

2. **D. sessilifolia,** Buckley. Leaves ovate-lanceolate, closely sessile and somewhat clasping; peduncles many-flowered; capsule cylindrical-oblong, narrowed into a short neck above. — Mountains, Alabama to North Carolina. — Leaves and capsule larger than in the last species.

3. LONICERA, L. Woodbine, Honeysuckle.

Calyx ovoid, 5-toothed. Corolla tubular, 5-cleft, often bilabiate, and gibbous near the base. Stamens 5. Ovary 2–3-celled, with several ovules in each cell. Berry 1–3-celled, several-seeded. Seeds bony. — Erect or twining shrubs, with entire, often connate leaves. Flowers by pairs or in spiked whorls.

1. **L. sempervirens,** Ait. Stem twining; leaves oblong or lanceolate, pale and tomentose beneath, the upper pair shorter and connate; spikes terminal; whorls distinct; corolla nearly equally 5-lobed, scarlet or orange without, yellow within. — Margins of swamps. April–Sept. — Leaves perennial. Corolla 2′ long.

2. **L. grata,** Ait. Stem twining; leaves obovate, glaucous beneath, the 2 or 3 upper pairs connate; whorls of flowers axillary and terminal; corolla bilabiate, the tube long and slender. — Mountains of Carolina and northward. May. — Young branches often hairy. Corolla 1½′ long, with a red or purplish tube and a white limb, changing to yellow. Berry orange-red.

3. **L. flava,** Sims. Smooth and somewhat glaucous; stem scarcely twining; leaves oval or obovate, the upper pairs connate; whorls of flowers crowded, terminal; corolla slender, bilabiate. — Banks of rivers in the upper districts. June – July. — Corolla 1′ long, bright yellow; the 4-cleft limb nearly as long as the tube.

4. **L. glauca,** Hill. Smooth; stem twining; leaves elliptical, glaucous beneath, 2′ – 3′ long, the upper pairs connate; whorls of flowers crowded, peduncled; corolla short, bilabiate, gibbous at the base; stamens hairy below. — Mountains of North Carolina. June. — Corolla 8″ – 10″ long, yellow and purplish.

5. **L. Sullivantii,** Gray. Smooth and glaucous; leaves oval or obovate-oblong, 2′ – 4′ long, nearly all more or less connate; corolla yellow; stamens smoothish. (L. parviflora, in part, *Flora.*) — Mountains of East Tennessee. May – June. — Stem 3° – 6 high. Corolla 1′ long.

4. TRIOSTEUM, L. Fever-wort.

Calyx ovoid, with 5 leafy linear-lanceolate persistent lobes. Corolla tubular, equally 5-lobed, rather longer than the calyx. Stamens 5. Ovary 3-celled, with a single ovule in each cell. Fruit a dry drupe containing 3 bony nutlets. — Perennial hairy herbs, with large leaves, narrowed but connate at the base, and sessile axillary flowers.

1. **T. perfoliatum,** L. Stem soft-hairy; leaves oval, acuminate, entire, hairy above, tomentose beneath; flowers commonly clustered, brownish purple. — Shady woods in the upper districts. June – July. — Stem 2° – 4° high. Leaves 4′ – 7′ long.

2. **T. angustifolium,** L. Stem hirsute; leaves lanceolate or oblong, acuminate, hirsute above, pubescent beneath; flowers mostly solitary, yellowish. — Shady rich soil among the mountains. June. — Plant smaller than the last.

5. SAMBUCUS, Tourn. Elder.

Calyx lobes minute or none. Corolla rotate, 5-lobed. Stamens 5. Fruit a globular baccate drupe, containing three 1-seeded nutlets. — Shrubs, with pinnate leaves, and white flowers, in ample terminal cymes.

1. **S. Canadensis,** L. Leaflets 7 – 11, oblong, serrate, smoothish, acute, the lower ones often 3-parted; cymes flat, 5-parted; fruit black. — Low grounds, common. June – July. — Stem 4° – 16° high, the straight young shoots with large pith.

2. **S. pubens,** Michx. Leaflets 5 – 7, oblong, serrate, pubescent beneath; cymes paniculate, pyramidal; fruit red. — Mountains of North Carolina, and northward. June. — Shrub 6° – 10° high. Cymes smaller than in the last.

6. VIBURNUM, L. Haw, Sloe.

Calyx minute, 5-toothed. Corolla rotate or somewhat campanulate, 5-lobed. Stamens 5. Ovary 1 – 3-celled, one of the cells containing a single ovule, the others empty. Drupe baccate, containing a single compressed bony nut. — Shrubs or small trees. Leaves lobed or undivided, the petioles sometimes winged. Flowers in terminal cymes, small, white; the marginal ones occasionally radiant and sterile.

* *Sterile and radiant flowers none.*

+ *Cymes sessile.*

1. **V. prunifolium,** L. Leaves thin, obovate or roundish, mostly obtuse, finely and sharply serrate, smooth and glossy, or the veins beneath and more or less dilated petioles rusty-pubescent; cymes large, 4 – 5-rayed; drupe oblong-ovoid, black. — Dry rich woods. April – May. — A small tree. Fruit edible.

2. **V. Lentago,** L. Leaves thin, ovate, acuminate, finely and sharply serrate, smooth above, the lower surface and dilated wavy petioles roughened with minute scales when young; cymes 4-rayed; fruit oval, black. — Mountains of Georgia, and northward. May. — A small tree.

Var. **pyrifolium**. Glabrous throughout; leaves ovate or oblong, obtuse, or abruptly acute; cymes often short-peduncled; fruit ovate, acute, bluish black. (V. pyrifolium, *Poir.*) — Banks of streams, mountains of Georgia. April.

3. **V. obovatum,** Walt. Leaves small, thick, obovate or obovate-oblong, obtuse, slightly crenate or entire, smooth; cymes 3-rayed; drupe ovoid, black. — River banks, Florida to North Carolina, and westward. April – May. — A shrub or small tree. Leaves ½′ – 1′ long. Cymes small.

+ *Cymes peduncled.*

++ *Leaves palmately lobed.*

4. **V. acerifolium,** L. Pubescent; leaves roundish or broadly ovate, rounded or cordate at the base, coarsely serrate, 3-lobed above the middle; cymes 7-rayed; fruit oval, black. — Dry open woods. May – June. — A slender shrub, 2° – 4° high. Leaves 2′ – 3′ wide, becoming smooth above, sometimes almost entire.

5. **V. densiflorum,** Chapm. Stem slender, branching; leaves small, downy beneath, varying from oblong to broadly ovate, entire, irregularly serrate, or slightly 2 – 3-lobed, acute at each end, or rounded at the base; cymes downy, small, compact, the base and ramifications involucrate with a whorl of linear bracts. — Wooded hillsides, West Florida. April. — Stems 2° – 4° high. Leaves 1′ – 2′ long.

++ ++ *Leaves undivided.*

6. **V. nudum,** L. Rusty-pubescent; leaves varying from oval to lanceolate, entire or nearly so, thick, becoming smooth above, prominently veined beneath; cymes rather short-peduncled, 5-rayed; fruit ovoid, blue. — Swamps, common. April – May. — Shrub 8° – 12° high.

Var. **angustifolium,** Torr. & Gray. Smoother; leaves thinner and narrower, obscurely serrulate or entire. — Margins of swamps, Florida to North Carolina.

Var. **serotinum,** Ravenel. Smooth, or nearly so, punctate; leaves oblong-ovate, attenuate above the middle, crenate-serrate, abruptly short-petioled; cyme long-peduncled, mostly leafy and corymbose, the divisions very slender, flowers very small, the filaments slightly exserted. — Low pine barrens near Darien, Georgia. Oct. – Nov.

7. **V. cassinoides,** L. Leaves thickish, ovate, obovate, or oblong, abruptly short-pointed, entire or crenulate-serrate, 2′ – 3′ long, smooth above, the lower surface, like the petioles and branchlets, scurfy; cymes 4-rayed; fruit 3″ long, ovoid, black. — Low ground, North Alabama to North Carolina.

8. **V. dentatum,** L. Veins of the leaves beneath with tufted hairs in their axils, otherwise smooth; leaves round-ovate, slightly cordate, coarsely serrate, acute, plicate by the strong impressed veins; cymes long-peduncled, 7-rayed; calyx smooth, with the lobes obtuse; fruit small, roundish, deep blue. — Rich damp soil. March – May. — A large shrub.

9. **V. molle,** Michx. Stellate-pubescent; leaves 3′ – 4′ long, thin, orbicular-cordate, dentate-serrate, acute, hairy on the impressed veins, the short petiole, with the setaceous stipule-like appendages, and bracted cyme glandular; calyx ciliate; corolla large, the lobes round; fruit "oblong-ovate." — Cliffs of the Coosa River, near Rome, Georgia May. — Shrub 6° – 8° high.

Var.? **tomentosum.** Leaves smaller (1½′ – 2½′ long) and thicker, ovate or oblong-ovate, seldom cordate, softly pubescent beneath; petioles and cymes glandless; stipule-like appendages none; corolla smaller; fruit roundish, blue. (V. scabrellum, *Flora.*) — Mostly in low ground in the lower districts. — Shrub 8° – 12° high.

10. **V. pubescens,** Pursh. Leaves small, ovate or oblong-ovate, coarsely serrate, hairy above, tomentose beneath, on very short petioles or the uppermost subsessile; cymes small, smoothish, 7-rayed; fruit oblong, black. — Mountains of North Carolina. June. — A shrub 2° – 3° high. Leaves 1′ – 2′ long.

* * *Marginal flowers radiant and sterile.*

11. **V. lantanoides,** Michx. Stem smooth and straggling; branches, cymes, and lower surface of the round-ovate, cordate, serrate leaves covered with tufted down; cymes sessile; fruit ovoid, black. — Deep shades on the mountains of North Carolina. June. — Stem 2° – 4° long. Leaves 4′ — 6′ long. Sterile flowers 1′ in diameter.

ORDER 71. **RUBIACEÆ.** (MADDER FAMILY.)

Herbs, shrubs, or trees. Leaves entire, opposite and united by interposed stipules, or whorled. — Calyx tube adherent to the ovary; the limb 4 – 6-toothed or lobed, or obsolete. Corolla 4 – 6-lobed, inserted on the throat of the calyx. Stamens 4 – 6, inserted on the tube of the corolla, and alternate with its lobes. Ovary 2 – 10-celled, with 1 – several anatropous or amphitropous ovules in each cell. Style mostly solitary. Albumen hard or fleshy.

Synopsis.

SUBORDER I. COFFEEÆ. Ovules and seed solitary in the cells (except No. 6). Calyx tube adherent to the ovary.

§ 1. Leaves whorled. Stipules none.

1. GALIUM. Corolla rotate, valvate in the bud. Fruit 2-celled. Herbs.

§ 2. Leaves opposite, rarely three in a whorl, with stipules interposed.

* Herbs. Mature fruit dry. Flowers single or clustered.

2. SPERMACOCE. Carpels 2, one or both open on the inner face. Flowers clustered. Calyx lobes persistent.
3. RICHARDIA. Carpels 2 - 4, closed. Calyx lobes deciduous. Flower clusters terminal.
4. DIODIA. Carpels 2 - 3, bony and closed. Style 2-cleft. Albumen fleshy.

* * Shrubs. Fruit dry. Flowers in globular peduncled heads.

5. CEPHALANTHUS. Carpels 2 - 4, separating at the base, closed.

* * * Shrubs. Fruit fleshy or pulpy. Flowers mostly axillary.

+ Ovaries united, forming a compound berry in fruit.

6. MITCHELLA. Flowers by pairs. Stamens 4. Berry 4-seeded.
7. MORINDA. Flowers numerous. Stamens 5. Berry 1-seeded.

+ + Ovaries and fruit separate.

++ Albumen horny.

8. CHIOCOCCA. Fruit flattened, even. Stigma entire. Seeds suspended.
9. PSYCHOTRIA. Fruit ribbed. Stigma 2-lobed. Seeds erect.

++ ++ Albumen fleshy.

10. STRUMPFIA. Corolla bell-shaped. Anthers subsessile, united. Leaves whorled.
11. GUETTARDA. Corolla salver-form. Anthers subsessile, separate.
12. ERITHALIS. Corolla subrotate. Filaments slender. Flowers panicled.
13. ERNODEA. Corolla salver-form. Flowers axillary, solitary.

SUBORDER II. CINCHONEÆ. Ovules and seeds numerous in the cells. Calyx tube adherent to the ovary. Leaves opposite.

* Fruit baccate, indehiscent. Shrubs.

+ Fruit 5-celled.

14. HAMELIA. Flowers cymose. Corolla cylindrical, crimson.

+ + Fruit 2-celled.

15. GENIPA. Flowers cymose. Corolla salver-form, white. Berry large.
16. RANDIA. Flowers solitary. Corolla 5-lobed, convolute in the bud.
17. CATESBÆA. Flowers solitary. Corolla 4-lobed, valvate.

* * Fruit capsular, loculicidally dehiscent.

+ Shrubs or trees.

18. PINCKNEYA. Shrubs or trees. Flowers cymose, terminal. Seeds winged.
19. EXOSTEMMA. Shrubs. Flowers solitary, axillary. Seeds winged.

+ + Herbs. Corolla valvate. Seed wingless.

20. HOUSTONIA. Corolla funnel- or salver-form, 4-lobed, longer than the calyx.
21. OLDENLANDIA. Corolla rotate, 4-lobed, shorter than the calyx.
22. PENTODON. Corolla funnel-form, 5-lobed. Capsule included in the calyx.

1. GALIUM, L.

Calyx teeth obsolete. Corolla rotate, 3 - 4-lobed. Stamens 3 - 4. Styles 2, united at the base. Stigma capitate. Fruit double, separating into two 1-seeded closed carpels. Albumen horny. — Slender herbs, with square stems and whorled leaves. Flowers minute.

* *Annual: fruit dry.*

1. **G. Aparine,** L. (Cleavers.) Annual; stems weak, retrorsely hispid, 2° – 3° long; leaves 6 – 8 in a whorl, lanceolate, hispid on the margins and midrib; peduncles long, 1 – 2-flowered; fruit bristly. — Waste places, sparingly introduced.

2. **G. virgatum,** Nutt. Low (6′ – 10′ high), simple or branching at the base, smooth or hispid; leaves 4 in a whorl, short (4″ or 5″), oblong-lanceolate, hispid-ciliate; peduncles axillary, short, bracteolate, 1-flowered; fruit hispid. — Barrens of Tennessee (*Gattinger*), and westward.

* * *Perennial.*

+ *Fruit baccate: peduncles 1 – 3-flowered: leaves 4 in a whorl.*

3. **G. hispidulum,** Michx. Stems much branched, slightly roughened, hairy at the joints; leaves small (2″ – 6″), rigid, lanceolate-ovate, rough on the margins and veins beneath, acute; berry roughened, bluish black. (Rubia Brownei, *Michx.*) — Dry sandy soil near the coast. May – Sept. — Stems 1° – 2° long. Root yellow. Flowers greenish white.

4. **G. uniflorum,** Michx. Smooth; stems mostly simple, slender, erect; leaves linear, acute, rough on the margins, punctate beneath; berry smooth, black. — Dry rich soil, Florida to South Carolina, and westward. June – July. — Stems numerous, 1° high. Flowers white.

+ + *Fruit dry: peduncles commonly 3 – many-flowered.*

++ *Fruit hispid.*

5. **G. triflorum,** Michx. Stems weak, diffuse, very rough; leaves 4 – 6 in a whorl, lanceolate or elliptical, cuspidate, the upper surface and veins beneath hispid; peduncles mostly 3-flowered; fruit densely uncinate-hispid. — Low shaded places. July. — Stems 2° – 3° long. Flowers greenish white. A smoother form is G. cuspidatum, *Muhl.*

6. **G. pilosum,** Ait. Stems rigid, hairy or roughened on the angles, branching; leaves small (4″ – 8″), 4 in a whorl, oval, slightly pointed, more or less hairy and roughened, dotted; peduncles 2 – 3 times forking; fruit pedicelled, bristly with hooked hairs. — Dry soil. June – Sept. — Stem 1° – 3° long. Flowers purple.

Var. **puncticulosum,** Gray. Stem, leaves, etc. smooth or nearly so; fruit often much larger. — Dry rich soil, Florida, and northward.

7. **G. circæzans,** Michx. Stems erect, smooth or nearly so; leaves large (1′ – 1½′), 4 in a whorl, oval, mostly obtuse, 3-nerved, pubescent; peduncles forking, then spreading and spike-like; fruit bristly with hooked hairs, nearly sessile, nodding. — Dry open woods. July. — Stems several, sparingly branched, 1° high. Flowers purple.

++ ++ *Fruit smooth.*

8. **G. trifidum,** L. Stems slender, weak, smooth or rough-angled, at length diffuse; leaves 4 – 6 in a whorl, unequal, varying from linear to spatulate-lanceolate, obtuse, smooth, or rough on the margins and midrib, the upper ones often opposite; peduncles 1 – 3-flowered; corolla lobes and stamens often 3. — Wet places. June – July. — Stems 1° – 2° long. Flowers white. Plant dries black.

9. **G. asprellum,** Michx. Stem weak, 2° - 4° long, diffusely branched, retrorsely hispid; leaves 6 in a whorl, lanceolate or elliptical, hispid on the midrib and margins; flowers very numerous, minute, white. — Mountains of North Carolina. July.

10. **G. latifolium,** Michx. Stems erect, smooth; leaves thin, 4 in a whorl, ovate-lanceolate, acute, smooth, 3-nerved, dotted, minutely fringed on the margins; peduncles filiform, 2 - 3 times forking. — Mountains of North Carolina, and northward. July. — Stems 1° - 1½° high. Leaves 1′ - 2′ long. Flowers purple.

11. **G. Arkansanum,** Gray. Stems low, smooth; leaves 4 in a whorl, lanceolate or linear, 1′ or less long, ciliate on the margins; peduncles forking. — West Tennessee (*Gattinger*), and westward.

2. SPERMACOCE, L.

Calyx 2 - 4-parted, persistent. Corolla salver-shaped or funnel-shaped, 4-lobed, valvate in the bud. Stamens 4, inserted on the throat of the corolla. Stigma simple or 2-cleft. Fruit composed of two 1-seeded carpels. Seeds grooved on the inner face. — Low herbs. Leaves obliquely straight-veined, their bases connected by the bristly-fringed sheathing stipules. Flowers small, in axillary sessile clusters.

* *Carpels separating at the apex, one of them closed by the partition, the other open.* — Spermacoce.

1. **S. glabra,** Michx. Stem 4-angled, smooth, erect; leaves lanceolate or oblong, acute, roughened on the margins and veins beneath; clusters globose, dense, many-flowered; corolla barely longer than the lanceolate calyx teeth, white, woolly within; stamens and style included; fruit obovate. — Banks of rivers, Florida, and westward. June. ♃ — Stem 1° - 2° high.

2. **S. tenuior,** L. Stem erect, smooth, slightly angled; leaves oblong-lanceolate, acute, rough above and on the margins; clusters few-flowered; corolla white, hairy within, 2 - 3 times as long as the calyx; stamens and slender style exserted; fruit turbinate. — Dry soil, Florida, Georgia, and westward. July. ♃ — Stem 6′ - 12′ high.

3. **S. Portoricensis,** Balbis. Stem slender, erect or prostrate, branching from the base, terete, smooth; leaves lanceolate, rough above, remote; clusters small, mostly few-flowered; flowers minute, the smooth white corolla barely longer than the subulate teeth of the calyx; stamens and style included; fruit ovoid, hairy. — South Florida, in dry soil. ① — Stem 3′ - 12′ long.

* * *Carpels both opening on the inner face.* — Borreria.

4. **S. parviflora,** Gray. Annual; stem erect, slender, simple or branched above, 4-angled, smooth; leaves remote, lanceolate, mostly obtuse, narrowed at the base, the upper surface and margins rough, the lateral veins obscure; clusters dense, globose, axillary and terminal; calyx teeth 4, subulate, longer than the minute (white) corolla; fruit ovoid, hairy. — Waste places, Florida. June - August. — Plant 6′ - 18′ high, pale green. Leaves 1′ long.

5. **S. podocephala,** Gray. Stems low (3′ – 6′), smooth, erect or ascending, branching at the base; leaves smooth, linear, with the margins revolute, those in the axils clustered, the floral ones mostly 4, longer than the solitary terminal long-peduncled globose head; stipular bristles 2 – 4; fruit pubescent, ovoid, crowned with two subulate spreading calyx lobes; corolla somewhat funnel-shaped, mostly 3-lobed, smooth within; stigma capitate. — Pine Key, South Florida (*Blodgett*).

3. RICHARDIA, L. False Ipecac.

Calyx 4 – 7-parted, the lobes deciduous. Corolla funnel-shaped, 3 – 6-lobed. Stamens 3 – 6, exserted. Style 3- or 4-cleft. Capsule separating into 2 – 4 one-seeded indehiscent nutlets. — Hairy branching herbs. Leaves united by bristly stipules. Flowers white, in terminal sessile clusters.

1. **R. scabra,** St. Hilaire. Annual, hirsute, forking; leaves ovate, acute, the two upper pairs involucre-like; calyx lobes subulate; nutlets 2 – 3, oblong. — Alabama, Georgia, and Florida. Introduced.

4. DIODIA, L.

Characters chiefly of Spermacoce, but the two bony indehiscent carpels closed on the inner face. — Herbs. Corolla tube often long and slender. Flowers few or solitary in the axils of the narrow leaves.

1. **D. Virginica,** L. Perennial; stem and leaves smooth, pubescent, or hirsute; stem prostrate, 4-angled; leaves somewhat fleshy, lanceolate, acute, sessile; flowers single, or 2 – 6 in a cluster; corolla hairy within, the tube long and slender; fruit ovoid, strongly ribbed, crowned with the 2 (rarely 4) linear or lanceolate calyx teeth. — Wet places. June – Sept. — Stem 1° – 4° long. Flowers white or purplish.

2. **D. teres,** Walt. Annual; stem erect, widely branched from the base, terete, bristly or hairy; leaves linear or lanceolate, acute, rough; flowers solitary or 2 – 3 together; corolla funnel-shaped; fruit obovate, even, crowned with the 4 short calyx teeth. — Dry sandy soil. July – Sept. — Stem 6′ – 12′ high, sometimes prostrate. Flowers purplish.

5. CEPHALANTHUS, L. Button-Bush.

Calyx obconical, 4-toothed. Corolla tubular, 4-cleft, imbricated in the bud. Stamens 4. Style slender, exserted. Stigma capitate Fruit dry, obconical, separating from the base into 2 – 4 one-seeded carpels. Seeds pendulous. Albumen horny. — Aquatic shrubs, with oval or lanceolate leaves, short entire stipules, and white flowers collected into a globose long-peduncled head. Receptacle hairy.

1. **C. occidentalis,** L. Smooth, or the young branches and lower surface of the ovate-oblong acute leaves pubescent; peduncles terminal, and in the upper axils. — Ponds and marshes. July – August. — Stem 4° – 12° high. Leaves petioled, 3′ – 5′ long, sometimes three in a whorl. Heads 1′ in diameter.

6. MITCHELLA, L. PARTRIDGE-BERRY.

Flowers by pairs, with their ovaries united. Calyx 4-toothed. Corolla funnel-shaped, 4-lobed, hairy within, valvate in the bud. Stamens 4. Style slender. Stigmas 4. Fruit composed of two 4-seeded fleshy drupes united, crowned with the 4-toothed calyx. — A smooth creeping evergreen shrub, with small broadly ovate leaves, minute stipules, and fragrant white terminal flowers.

1. **M. repens,** L. — Shady woods. March – April. — Stem 1° – 2° long. Leaves 6″ – 10″ long, mostly somewhat cordate, shining above, on slender petioles. Corolla ½′ long. Fruit red.

7. MORINDA, L.

Flowers numerous, their ovaries united into a head. Calyx obscurely toothed. Corolla funnel-shaped, 5-lobed, valvate in the bud. Stamens 5, short. Style slender. Stigmas 2, filiform. Fruit composed of 2 – 4 one-seeded carpels, all united into a fleshy head. — Trees or shrubs. Leaves opposite or whorled. Stipules within the leaves. Flowers terminal, or opposite the leaves.

1. **M. Roioc,** L. Stem smooth, procumbent or climbing; leaves smooth, lanceolate and acuminate, or obovate-oblong and abruptly acute, short-petioled; stipules broad and short; flowers small, crimson. — South Florida. March - April.

8. CHIOCOCCA, Browne. SNOWBERRY.

Calyx ovate, 5-toothed. Corolla funnel-shaped, 5-lobed, valvate in the bud. Stamens 5, inserted on the base of the corolla; anthers linear, included. Style slender. Stigma obtuse. Fruit fleshy, roundish, compressed, composed of two oblong 1-seeded nutlets. Seeds suspended. — Shrubs. Leaves smooth, petioled. Stipules connate. Flowers in axillary racemes, white or yellow.

1. **C. racemosa,** Jacq. Erect; leaves oblong (2′ – 3′ long), acute at both ends; racemes mostly longer than the leaves, often compound, many-flowered; corolla many times longer than the calyx teeth, white, turning yellow. — Varies with the stems prostrate and vine-like, leaves smaller (½′ – ¾′ long), more rigid, and longer than the few-flowered simple racemes. — South Florida. — Fruit white.

9. PSYCHOTRIA, L.

Calyx ovate, 5-toothed, or nearly entire. Corolla short, funnel-shaped, 4 – 5-lobed, valvate in the bud. Stamens 4 – 5. Stigma 2-cleft. Fruit drupaceous, composed of two 1-seeded carpels, mostly ribbed or angled when dry. Seeds erect. Albumen horny. — Shrubs or trees. Leaves opposite, narrowed to a petiole. Stipules sometimes membranaceous and deciduous. Flowers mostly in terminal corymbs or panicles.

1. **P. undata,** Jacq. Leaves lanceolate, or lanceolate-elliptical, acuminate at each end, the lower surface as well as the branches ferruginous-pubescent, sometimes glabrous; stipules clasping, ovate, obtuse, deciduous;

corymbs terminal, trichotomous at the base. — South Florida. — Leaves 2′–3′ long. Fruit ovate, red.

2. **P. tenuifolia,** Swartz. Leaves oblong, acuminate at each end, undulate, rugose, and, like the branches, smooth; stipules, membranaceous, acute, deciduous; cyme sessile, twice trichotomous, shorter than the leaves; corolla naked at the throat, hairy at the insertion of the filaments; fruit ovoid, 10-ribbed. — South Florida. — Leaves about 3′ long. Flowers small.

10. STRUMPFIA, Jacq.

Calyx limb 5-parted; the lobes acute, erect. Corolla somewhat bell-shaped, deeply 5-parted, the tube very short, the lobes erect, lanceolate, spreading at the apex. Stamens 5, inserted on the base of the corolla; filaments very short; anthers thick, cohering in an ovoid-oblong 5-angled tube. Style single, as long as the anthers, villous; stigma obtuse, 2-lobed. Ovary 2–4-celled with a single ovule in each cell. Fruit a 2–4-celled, 1–4-seeded drupe. — A low maritime shrub. Branches roughened by the persistent stipules, trichotomous. Leaves ternate, very rigid, linear, obtuse, entire, the margins revolute. Flowers small, in axillary racemes, shorter than the leaves. Corolla pubescent. Drupe small, red.

1. **S. maritima,** Jacq. — South Florida, *Blodgett.*

11. GUETTARDA, L.

Calyx tube ovoid, the limb tubular, scarcely toothed. Corolla salver-shaped, 4–9-lobed, naked in the throat. Anthers 4–9, sessile in the throat of the corolla. Style simple. Stigma mostly capitate. Fruit composed of 4–9 one-seeded bony carpels, united. — Trees or shrubs, with ovate or lanceolate leaves, and lanceolate deciduous stipules. Peduncles axillary, forking. Flowers sessile.

1. **G. elliptica,** Swartz. Leaves membranaceous, elliptical, slightly mucronate, feather-veined, rough above, the lower surface, especially the veins, like the branches and cymes, covered with appressed silky hairs; cymes shorter than the leaves, 5–10-flowered; flowers silky, tetramerous (rarely trimerous); stigma entire; fruit globose, composed of 4 nutlets surrounded by 8 empty cells, calyx limb truncate, cleft on one side. — South Florida. — Leaves 1′–1½′ long. Fruit as large as a pea.

2. **G. scabra,** Lam. Leaves coriaceous, elliptical or somewhat obovate, cordate at the base, rugose, muricate above, the lower surface, like the branches and cymes, rusty-tomentose; cymes longer than the leaves, several-flowered; fruit globose, 4-seeded, without empty cells. — South Florida. — Leaves larger than in No. 1.

12. ERITHALIS, Browne.

Calyx ovoid, obscurely 4–10-toothed. Corolla somewhat rotate, 4–10-parted, with linear spreading lobes. Stamens 4–10, inserted on the base of the corolla: anthers linear. Style simple. Stigma 2 lipped. Fruit globose, ribbed, composed of 4–10 one-seeded bony carpels. Seeds suspended. —

Smooth shrubs, with opposite petioled leaves, broad and short mucronate sheathing stipules, and axillary panicled flowers.

1. **E. fruticosa,** L. Leaves coriaceous, oblong, obtuse, shining, narrowed into a petiole; panicles about as long as the leaves, many-flowered; flowers mostly tetramerous, small; fruit 5-ribbed, 6 – 10-celled. — South Florida. — Leaves 2′ – 3′ long. Flowers white.

13. ERNODEA, Swartz.

Calyx ovate; the limb 4 – 6-parted, persistent. Corolla salver-shaped, slender; the lobes 4 – 6, revolute. Stamens exserted; anthers linear, erect. Style slender, longer than the stamens. Fruit obovate, somewhat fleshy, the two separable horny carpels closed. Seeds furrowed on the inner face. — A somewhat shrubby prostrate and smooth plant, with rigid 3-nerved lanceolate leaves, and solitary sessile axillary flowers.

1. **E. littoralis,** Swartz. — South Florida, along the coast. March – April. — Stems straight, rigid, 4-angled, smooth. Branches short, alternate. Leaves sessile, smooth, acute, the upper ones crowded. Flowers sessile in the upper axils, yellow. Fruit roundish.

14. HAMELIA, Jacq.

Calyx oval, 5-toothed. Corolla tubular, somewhat 5-angled, 5-lobed. Stamens 5, inserted near the base of the tube of the corolla: anthers linear. Style simple. Stigma obtuse. Berry ovoid, 5-furrowed, 5-celled, many-seeded. Seeds minute, compressed. — Shrubs, with opposite or whorled oblong petioled leaves, lanceolate stipules, and orange-colored flowers, in axillary and terminal cymes.

1. **H. patens,** Jacq. Pubescent; branches angled; leaves 3 in a whorl, oblong, acute; cymes terminal, peduncled, umbellate; corolla cylindrical, the lobes concave at the apex, and mucronate on the back. — South Florida. — Leaves 3′ – 5′ long. Berry black.

15. GENIPA, L.

Calyx tube produced above the ovary, truncate or 5-toothed. Corolla salver-form, 5-parted, convolute in the bud. Stamens 5, inserted near the throat of the corolla: anthers nearly sessile. Stigma clavate or 2-cleft. Ovary 1-celled, the two placentæ nearly meeting at the axis. Berry large, pulpy within, many-seeded. — Tropical shrubs or trees.

1 **G. clusiæfolia,** Griseb. (SEVEN-YEAR APPLE.) Leaves clustered at the end of the branches, obovate, glabrous; stipules large, persistent; racemes corymbose; corolla fleshy. — South Florida. — Shrub 6° – 8° high. Leaves 3′ – 4′ long. Corolla 1′ long, white, very fragrant.

16. RANDIA, Houst.

Calyx obovate, 5-toothed. Corolla salver-shaped, 5-lobed. Anthers 5, sessile in the throat of the corolla, linear. Style simple, short. Stigma clavate, 2-lobed. Fruit somewhat dry, 2-celled, many-seeded. Seeds wingless. — Branching mostly spiny shrubs, with opposite leaves, and solitary stipules between the petioles. Flowers solitary or in short racemes.

1. **R. aculeata,** L. Spiny or unarmed; leaves small, obovate, smooth, coriaceous; flowers solitary, axillary; corolla (white) hairy in the throat, the tube 2–3 times as long as the calyx, the limb convolute in the bud. — South Florida. — Branches rigid. Leaves 5″–10″ long, rather longer than the subulate spreading spines. Corolla 3″–4″ long. Fruit ovoid, as large as a pea, about 6-seeded. Sinuses of the calyx hairy.

17. CATESBÆA, L.

Calyx 4-toothed or 4-parted. Corolla funnel-shaped, 4-lobed. Stamens 4, inserted on the base of the corolla. Stigma 2-lobed. Berry 2-celled, many-seeded, the placentæ at the top of the partition. Seeds flat, imbricated. — Spiny shrubs, with small thick opposite leaves, and axillary whitish flowers.

1. **C. parviflora,** Swartz. Glabrous; leaves oval or obovate, mostly shorter than the spines, the margins revolute; flowers sessile; corolla small (4″ long), the tube 4-angled; berry globose. — Bahia Honda, South Florida (*Curtiss*). — Shrub 4°–8° high.

18. PINCKNEYA, Michx. GEORGIA BARK.

Calyx oblong-obovate, 5-lobed, the lobes lanceolate, deciduous, or one of them, in the outer flowers, often transformed into a large colored leaf. Corolla tubular, hairy, with five linear-oblong revolute lobes, slightly imbricated in the bud. Stamens 5, exserted: anthers oblong. Stigma obtuse. Capsule globose, papery, 2-celled, opening loculicidally at the apex, and at length septicidally to the base. Seeds numerous, in two rows, horizontal, membranaceous, winged. — A shrub or small tree, with pubescent branches. Leaves large, oval or oblong, acute, smoothish above, the lower surface, like the terminal compound cyme, hoary-pubescent. Stipules linear, deciduous.

1. **P. pubens,** Michx. — Marshy banks of streams in the pine barrens, Florida to South Carolina. May–June. — More conspicuous for its ovate pink-colored floral leaves, than for its purplish spotted corolla.

19. EXOSTEMMA, DC.

Calyx obovate or tubular; the limb 5-toothed, persistent. Corolla tube very long, terete; the limb with five long linear recurved lobes, valvate in the bud. Stamens 5, exserted. Style filiform, thickened above. Stigma obtuse or 2-lobed. Capsule coriaceous, ovoid, 2-celled, opening loculicidally at the apex, and septicidally nearly to the base, many-seeded. Seeds circular, imbricated, winged. — Trees or shrubs. Leaves opposite. Stipules solitary Flowers white or reddish.

1. **E. Caribæum,** R. & S. Smooth; branches slender; leaves ovate-lanceolate, acuminate; peduncles axillary, solitary, 1-flowered; corolla as long as the leaves. — South Florida. — Shrub 6°–12° high. Corolla 2′ long, fragrant.

20. HOUSTONIA, Gronov. BLUETTE.

Flowers tetramerous, dimorphous. Calyx 4-toothed. Corolla salver- or funnel-form, 4-lobed, valvate in the bud. Stamens and styles long or short.

Stigmas 2. Capsule 2-celled, free from the calyx above, opening across the top. Seeds few or numerous. Albumen horny. — Low herbs, with solitary or cymose white or blue flowers.

* *Corolla salver-shaped: peduncles axillary, solitary.*

1. **H. cœrulea,** L. (INNOCENCE.) Perennial; stems erect, 4′–6′ high; radical leaves tufted, spatulate-obovate, obtuse, the upper small and distant; pedicels erect or declining; flowers nodding in the bud; corolla 5″–6″ wide, blue or white with a yellow eye, its tube thrice the length of the subulate calyx lobes; capsule obcordate. — Low ground chiefly in the upper districts. April – May.

2. **H. patens,** Ell. Annual; stems erect; radical leaves acute; branches and pedicels spreading; flowers erect in the bud; corolla 3″ wide, deep blue, and no yellow eye, its tube twice the length of the calyx lobes; otherwise like the preceding. — Roadsides and dry banks. Feb. – April.

3. **H. serpyllifolia,** Michx. Perennial, smooth; stems filiform, prostrate, branching; leaves ovate or roundish, abruptly contracted into a long slender petiole; peduncles elongated, terminal, and in the forks of the stem. — High mountains of North Carolina. — Stems 6′–12′ long. Peduncles 1′–2′ long. Flowers deep blue.

4. **H. rotundifolia,** Michx. Perennial; stems diffuse, creeping; leaves round or oval, fleshy, abruptly contracted into a short petiole; peduncles mostly shorter than the leaves, recurved in fruit; flowers white. — Sandy soil near the coast, Florida to South Carolina, and westward. Feb. – March, and bearing inconspicuous fruiting flowers through the year.

* * *Corolla funnel-shaped: flowers diœciously dimorphous: capsule free at the apex: stem 4-angled: flowers in terminal cymes.*

5. **H. purpurea,** L. Pubescent; stem branching, erect; leaves ovate or lanceolate-ovate, sessile, 3–5-ribbed; calyx lobes longer than the capsule; corolla purple or nearly white, slightly hairy within; capsule roundish. — Woods, chiefly in the upper districts. June – July. — Stems 8′–12′ high. Calyx lobes occasionally 3–4 times the length of the capsule.

Var. **longifolia,** Gray. Smooth; leaves lanceolate or linear, 1-ribbed, the lowest spatulate-oblong; calyx lobes as long as the globose capsule. — With the preceding.

Var. **tenuifolia,** Gray. Branches and pedicels filiform, spreading; leaves remote, narrow-linear; flowers and capsules smaller. — Mountains of North Carolina. July.

6. **H. angustifolia,** Michx. Smooth; root woody; stems clustered, erect, branching above; leaves linear; cymes crowded, with the central flowers nearly sessile; corolla white, very hairy within; capsule ovoid, as long as the calyx teeth. — Sandy pine barrens, Florida, and westward. June – July. — Stems 1°–2° high.

Var. **filifolia,** Gray. Stems shrubby at the base, diffusely branched; leaves filiform, remote; cymes scattered, 3-flowered, the slender pedicels equal and spreading; capsule obcordate, rather longer than the calyx teeth, the upper half free. — South Florida. — Stem slender, 6′–10′ long. Flowers and capsules very small.

21. OLDENLANDIA, Plum.

Flowers tetramerous, not dimorphous. Calyx 4-lobed. Corolla rotate, 4-lobed, longer than the 4 incurved stamens; anthers ovoid. Capsules included, many-seeded. Albumen fleshy. — Small marsh herbs, with opposite leaves, 4 – 5-parted stipules, and axillary single or clustered minute flowers.

1. **O. Boscii,** Chapm. Stems 4-angled, smooth, diffuse; leaves linear; flowers single, or 2 – 3 together; corolla white or purplish; capsule ovoid. — River banks, Florida to South Carolina, and westward. July. — Stems 6′ – 10′ long.

2. **O. glomerata,** Michx. Stems terete, smooth or pubescent, branching; leaves oblong or oval, short-petioled; clusters dense, many-flowered; corolla greenish white. — Wet places, Florida to North Carolina, and westward. July. — Stems 3′ – 15′ high. Earlier flowers mostly single.

22. PENTODON, Hochst.

Flowers pentamerous. Calyx turbinate, 5-toothed. Corolla funnel-shaped, 5-lobed, longer than the calyx teeth. Stamens short. Capsule included, many-seeded. Albumen fleshy. — Tender prostrate glabrous annuals.

1. **P. Halei,** Gray. Stems weak, diffuse, forking; leaves oval-oblong, acute at each end, somewhat fleshy; flowers solitary, or in short 3 – 5-flowered cymes, white. — Banks of rivers, Florida, and westward. July. — Stem 6′ – 12′ long. Leaves 1′ long.

ORDER 72. LOGANIACEÆ. (LOGANIA FAMILY.)

Herbs, shrubs, or trees, with opposite entire stipulate leaves, regular flowers, and the calyx free from the ovary, which mainly distinguishes the order from Rubiaceæ.

Synopsis.

* Herbs.

1. SPIGELIA. Corolla tubular. Style single, jointed.
2. MITREOLA. Corolla short, 5-lobed. Styles 2, united above.
3. POLYPREMUM. Corolla short, 4-lobed. Style single.

* * Evergreen woody vines.

4. GELSEMIUM. Corolla campanulate. Seed winged.

1. SPIGELIA, L. Pinkroot.

Calyx 5-parted, the lobes linear-subulate, persistent. Corolla tubular-funnel-shaped, 5-lobed, valvate in the bud. Stamens 5, anthers linear. Style slender, jointed, hairy above. Stigma capitate. Capsule composed of two few-seeded carpels, which at length separate at the base and open loculicidally. — Herbs. Leaves opposite. Flowers in one-sided terminal spikes, rarely solitary.

1. **S. loganioides,** A. DC. Stem simple, ascending, somewhat 4-angled, the upper part and joints slightly puberulent; leaves ovate or obo-

vate, sessile, the upper surface and margins roughish; flowers axillary, solitary, or the terminal ones three in a cluster; tube of the corolla more than twice as long as the calyx lobes. — Near Fort King, East Florida. — Stem 6′ – 10′ high. Leaves 4″ – 9″ long. Corolla 4″ long, white.

2. **S. gentianoides,** Chapm. Stem erect, simple, 4-angled, roughish; leaves roundish, ovate, or oblong, sessile, acute, the upper surface and margins roughened; spikes terminal, few-flowered; lobes of the corolla connivent; stamens and style included. — Light dry soil, West Florida. May – June. — Stem 6′ – 10′ high. Corolla 6″ – 10″ long, pale rose-color.

3. **S. Marilandica,** L. Stem simple, erect, smooth, 4-angled; leaves ovate-lanceolate, or oblong, acute, sessile, pubescent on the veins; spikes terminal, many-flowered, sometimes forking; corolla long, slender, the lobes spreading; anthers and style exserted. — Rich woods. May – June. — Stem 1° – 2° high. Corolla 1½′ long, scarlet, yellow within. — A popular vermifuge.

2. MITREOLA, L. MITRE-WORT.

Calyx 5-parted. Corolla short, 5 lobed, valvate in the bud, the tube roundish, bearded in the throat. Stamens 5, included: anthers ovate. Styles 2, short, united above. Stigma capitate. Capsule 2-parted, mitre-shaped, many-seeded, the two lobes opening on the inner face near the apex. Seeds oval, concave. — Smooth herbs, with opposite leaves, and small white flowers in terminal and axillary cymes, with the simple branches recurved in the bud.

1. **M. petiolata,** Torr. & Gray. Stem branching; leaves thin, oblong, acute, narrowed into a petiole. (Ophiorhiza lanceolata, *Ell.*) — Muddy banks, Florida to North Carolina, and westward. June – Sept. ① — Stem 4-angled, 1° – 2° high. Leaves 2′ – 3′ long.

2. **M. sessilifolia,** Torr. & Gray. Stem simple, 4-angled; leaves thick, ovate or roundish, strongly veined, sessile, rough on the margins; flowers and capsule very small. (Ophiorhiza Mitreola, *Michx.*) — Varies with lanceolate obscurely veined leaves, and larger flowers and fruit. — Grassy swamps. July – Sept. ① — Stem 6′ – 18′ high. Leaves 6″ – 10″ long. Plant pale green.

3. POLYPREMUM, L.

Calyx deeply 4-parted, persistent. Corolla wheel-shaped, bearded in the throat, 4-lobed, imbricated in the bud. Stamens 4. Style single, very short. Stigma ovoid, entire. Capsule ovoid, compressed, 2-celled, loculicidally 2-valved, many-seeded. — A low smooth perennial herb, with 4-angled forking stems, linear acute leaves, their bases united by the membranaceous stipules, and solitary sessile white flowers in the forks of the stem.

1. **P. procumbens,** L. — Waste places, Florida to North Carolina. June – Sept. — Stems 6′ – 10′ long, erect or prostrate, clustered. Flowers very small, the corolla barely longer than the calyx lobes.

4. GELSEMIUM, Juss. YELLOW JESSAMINE.

Flowers dimorphous. Calyx 5-parted, persistent. Corolla funnel-shaped, 5-lobed: the lobes rounded, emarginate, spreading, quincuncial in the bud, the sinuses impressed. Stamens 5, inserted near the base of the corolla: anthers oblong-sagittate, extrorse. Styles united, filiform, partly persistent. Stigmas 4, linear, spreading. Capsule oblong, compressed, 2-celled, opening septicidally to the middle, and loculicidally at the apex, each valve tipped with the persistent base of the styles. Seeds several, oval, flat, winged, obliquely imbricated in two rows. — A smooth woody vine, with opposite evergreen leaves, minute stipules, and large yellow fragrant flowers, in axillary bracted and cluster-like racemes.

1. **G. sempervirens,** Ait. — Margins of swamps, and river banks, near the coast. March - April. — Stem twining, purplish. Leaves lanceolate or ovate, acute or subcordate at the base, short-petioled. Racemes few-flowered. Pedicels scaly. Corolla 1′ - 1½′ long.

ORDER 73. VALERIANACEÆ. (VALERIAN FAMILY.)

Herbs with opposite exstipulate leaves, and cymose flowers. — Calyx tube adherent to the ovary. Corolla tubular or funnel-shaped, mostly 5-lobed, imbricated in the bud. Stamens distinct, fewer than the corolla lobes, and inserted on its tube. Ovary 3-celled, two of which are empty, the third containing a single suspended anatropous ovule. Style slender. Stigmas 1 - 3. Fruit 1 - 3-celled,1-seeded. Albumen none.

1. VALERIANA, Tourn. VALERIAN.

Limb of the calyx composed of several plumose bristles, at first incurved, afterward spreading. Corolla gibbous at the base, 5-lobed. Stamens 3. Fruit 1-celled, 1-seeded. — Perennials.

1. **V. scandens,** L. Smooth; stem climbing; leaves on slender petioles, ternately divided; leaflets ovate, entire; cymes paniculate, diffuse, axillary and terminal; corolla very short. — East Florida.

2. **V. pauciflora,** Michx. Smooth; stem (1° - 3° high) erect, or decumbent at the base, simple; leaves membranaceous, toothed or serrate, the radical ones mostly entire, ovate or cordate, long-petioled, the others pinnately 3 - 7-lobed; cymes terminal, in a close panicle; tube of the pale pink corolla long and slender. — Mountains of Tennessee, and northward. June - July.

2. VALERIANELLA, Tourn. LAMB LETTUCE.

Calyx limb toothed or obsolete. Corolla funnel-shaped, 5-lobed. Stamens 3. Fruit 3-celled, two of the cells empty and sometimes confluent into one, the other 1-seeded. — Annual herbs, with forking stems, opposite entire or lobed leaves, and white or purplish flowers in crowded bracted cymes.

1. **V. radiata,** Dufr. Leaves oblong, the upper ones clasping and toothed at the base; fruit mostly downy, ovoid, with a furrow between the parallel and contiguous empty cells; flowers white. — River banks, Florida, and northward. Feb. - March. — Stem 6′ - 12′ high.

2. **V. olitoria,** Poll. Flowers pale blue; fruit compressed, oblique, with a corky mass at the back of the fertile cell, the empty cells large and sometimes confluent; stem and leaves as in *F. radiata.* — New Orleans. Introduced.

3. **V. Woodsiana,** Walp., var. **patellaria,** Gray. Flowers white; fruit circular, notched at both ends, the empty cells concave, broader than the fertile one, and forming a wing around it. — Nashville (*Dr. Gattinger*).

ORDER 74. DIPSACACEÆ. (TEASEL FAMILY.)

Plants in habit and inflorescence resembling the next order, but with separate anthers, and albuminous suspended seeds, represented here by a single species of

1. DIPSACUS, Tourn. TEASEL.

Heads oblong. Involucre many-leaved. Flowers in the axil of a thin awn-pointed bract, and enclosed in a 4-leaved involucel. Calyx 4-angled, truncate, adnate to the 1-celled, 1-ovuled ovary. Corolla 4-cleft. Stamens 4, inserted on the corolla. — Tall biennials.

1. **D. sylvestris,** Miller. Stem prickly, 3°–5° high; leaves ovate-lanceolate, the lowest oblong, crenate-serrate; involucre longer than the head; bracts straight-awned; flowers pale purple. — North Carolina. Introduced from Europe.

ORDER 75. COMPOSITÆ. (COMPOSITE FAMILY.)

Flowers clustered in a dense head upon a common receptacle, and surrounded by an involucre. Calyx united with the ovary; the limb (*pappus*) either obsolete, or forming a cup-like or toothed border, or divided into chaffy scales or bristles. Corolla superior, flat or funnel-shaped, 5- (rarely 4-) lobed, valvate in the bud. Stamens alternate with the lobes of the corolla, and inserted into its tube: anthers cohering in a cylinder (*syngenesious*). Style single: stigmas 2. Fruit (achenium) dry and seed-like. Seed solitary, erect, without albumen. Radicle inferior. — Herbs or shrubs. Leaves without stipules. Involucre composed of short or leafy bracts (*scales of the involucre*), arranged in 1 – many series. Receptacle naked, or furnished with scales (*chaffy*). Heads with the flowers all tubular (*discoid*), or all strap-shaped, or the marginal ones strap-shaped or ligulate (*radiate*).

Artificial Synopsis of the Genera.

SUBORDER I. TUBULIFLORÆ. Corolla of the perfect flowers tubular, equally 5- (rarely 3–4-) lobed. Ray flowers, when present, ligulate, either pistillate or neutral.

§ 1. Heads discoid.

* Heads with the flowers all perfect.

		No.
Pappus none. Leaves resinous-dotted, linear. Flowers yellow	FLAVERIA.	69
Pappus none. Leaves opposite, ovate. Flowers yellow	VERBESINA.	58
Pappus none. Leaves alternate. Flowers white	HARTWRIGHTIA.	5
Pappus bristly or hairy.		
Flowers yellow.		
Receptacle pointed	BIGELOVIA.	21
Receptacle flat	SOLIDAGO.	20
Receptacle convex	SENECIO.	80
Flowers white, blue, or purple.		
Receptacle chaffy.		
Leaves opposite. Flowers white	MELANTHERA.	47
Leaves alternate. Flowers purple	CARPHEPHORUS.	7
Receptacle bristly.		
Leaves spiny	CNICUS.	84
Leaves not spiny, cordate	ARCTIUM.	85
Receptacle naked.		
Scales of the involucre in a single row	CACALIA.	83
Scales of the involucre in 2 or more rows.		
Pappus double, the outer row very short	VERNONIA.	1
Pappus single.		
Achenia ribbed or striate.		
Pappus plumose. Flowers cream-colored	KUHNIA.	11
Pappus scabrous. Leaves cordate. Flowers purple	BRICKELLIA.	12
Pappus scabrous. Leaves narrow. Heads racemed	LIATRIS.	8
Pappus scabrous. Leaves oblong. Heads panicled	TRILISIA.	9
Pappus scabrous. Leaves obovate. Stems woody	GARBERIA.	10
Achenia not ribbed, 5-angled.		
Receptacle conical	CONOCLINIUM.	13
Receptacle flat. Stems climbing	MIKANIA.	14
Receptacle flat. Stems erect	EUPATORIUM.	13
Pappus scaly.		
Flowers blue or purple.		
Pappus a cup-shaped border of united scales	AGERATUM.	4
Pappus slender, almost bristly.		
Pappus deciduous. Heads large and single	STOKESIA.	2
Pappus persistent. Heads small, in 3-bracted clusters	ELEPHANTOPUS.	3
Pappus of 5 oval almost bony scales. Leaves whorled	SCLEROLEPIS.	6
Flowers white.		
Receptacle naked.		
Leaves entire, linear or lanceolate	POLYPTERIS. PALAFOXIA.	67 68
Leaves entire, ovate or cordate	AGERATUM.	4
Leaves pinnately lobed	HYMENOPAPPUS.	66
Receptacle chaffy.		
Achenium top-shaped. Scales of the pappus 5-6	MARSHALLIA.	65
Achenium flat. Pappus 2-awned	ACTINOMERIS.	59
Flowers yellow. Pappus 2-4-awned.		
Awns of the pappus deciduous	HELIANTHUS.	56
Awns of the pappus persistent, hispid upward	COREOPSIS.	60
Awns of the pappus persistent, hispid downward	BIDENS.	62

* * Heads with flowers variously imperfect.

Marginal flowers pistillate. Central flowers perfect, but abortive.		
Pappus bristly.		
Scales of the involucre in a single row	ERECHTHITES.	82

		No.
Scales of the involucre in 2 or more rows.		
Pubescence woolly. Receptacle partly chaffy	FILAGO.	33
Pubescence woolly. Receptacle naked	GNAPHALIUM.	32
Pubescence tomentose. Stem winged	PTEROCAULON.	30
Pubescence glandular. Heads corymbose	PLUCHEA.	29
Pappus a 5-lobed border. Flowers yellow	TANACETUM.	77
Pappus none. Leaves pinnately divided	ARTEMISIA.	78
Marginal flowers pistillate. Central flowers staminate.		
Pappus none. Style rigid, persistent	SOLIVA.	79
Pappus none. Style deciduous. Heads nodding	IVA.	41
Marginal flowers neutral. Central flowers perfect	CENTAUREA.	86

* * * Heads diœcious or monœcious.

Staminate and pistillate heads on the same plant.		
Fruiting involucre 1-seeded, naked or tubercled	AMBROSIA.	42
Fruiting involucre 2-seeded, armed with hooked spines	XANTHIUM.	43
Staminate and pistillate heads on separate plants.		
Anthers tailed. Hoary herbs	ANTENNARIA.	31
Anthers tailless. Smooth shrubs	BACCHARIS.	27

§ 2. Heads radiate.

Rays pistillate.		
Flowers all fertile.		
Receptacle naked.		
Rays yellow. Leaves opposite.		
Pappus none. Heads 1-rayed	FLAVERIA.	69
Pappus scaly. Leaves fringed, dotted	PECTIS.	73
Pappus scaly. Leaves divided	DYSODIA.	72
Pappus capillary. Heads large	ARNICA.	80
Rays yellow. Leaves alternate.		
Scales of the involucre in 1 row	SENECIO.	81
Scales of the involucre in 2 rows	HELENIUM.	71
Scales of the involucre in several rows Heads large	INULA.	28
Pappus double, of the ray and disk flowers alike	CHRYSOPSIS.	24
Pappus double, of the ray flowers none	HETEROTHECA.	23
Pappus single.		
Leaves alternate. Heads racemed or clustered	SOLIDAGO.	20
Leaves alternate. Heads panicled	APLOPAPPUS.	22
Pappus of 2–8 bristles	GRINDELIA.	25
Rays white or purple.		
Pappus none. Rays pale purple	BELLIS.	19
Pappus none. Rays white	CHRYSANTHEMUM.	76
Pappus chaffy. Rays white	BOLTONIA.	18
Pappus bristly or capillary.		
Pappus double	DIPLOPAPPUS.	16
Pappus single.		
Rays few	SERICOCARPUS.	15
Rays numerous	ASTER. ERIGERON.	16 17
Receptacle chaffy.		
Involucre double, the outer 4-leaved, 4-angled	TETRAGONOTHECA.	50
Involucre imbricated or spreading.		
Maritime shrubs. Pappus 4-toothed	BORRICHIA.	45
Herbs.		
Receptacle conical or elongated.		
Rays persistent. Corolla lobes velvety	ZINNIA.	48
Rays deciduous. Achenia 3–4-angled	HELIOPSIS.	49
Rays deciduous. Achenia compressed	SPILANTHES.	51

		No
Receptacle flat.		
Leaves lobed, alternate	ACHILLEA.	75
Leaves lobed, opposite	WEDELIA.	46
Leaves not lobed. Pappus 2-awned	VERBESINA.	58
Leaves not lobed. Pappus none	ECLIPTA.	44
Flowers of the disk sterile.		
Rays yellow. Pappus none	POLYMNIA.	34
Rays yellow. Pappus none. Achenia prickly	ACANTHOSPERMUM.	35
Rays yellow. Pappus a toothed crown	CHRYSOGONUM.	36
Rays yellow. Pappus 2-toothed or awned. Achenia winged	SILPHIUM.	37
Rays yellow. Pappus 2-toothed or awned. Achenia wingless	BERLANDIERA.	38
Rays yellow. Pappus 2-toothed. Achenia wingless	LINDHEIMERIA.	39
Rays yellow. Pappus of the rays none, of the disk flowers bristle-like scales.	AMPHIACHYRIS.	26
Rays white. Receptacle conical	PARTHENIUM.	40
Rays neutral (without pistils).		
Receptacle naked or nearly so.		
Achenia villous. Pappus scaly, long-awned	GAILLARDIA.	70
Achenia smooth or the angles hairy. Pappus awnless	LEPTOPODA.	71
Receptacle deeply pitted.		
Margins of the pits entire. Perennial	BALDWINIA.	63
Margins of the pits toothed. Annual	ACTINOSPERMUM.	64
Receptacle chaffy throughout.		
Involucre double. Pappus 2–4-awned.		
Awns of the pappus hispid upward	COREOPSIS.	60
Awns of the pappus hispid downward. Achenia beakless	BIDENS.	62
Awns of the pappus hispid downward. Achenia beaked	COSMOS.	61
Involucre simple or imbricate.		
Pappus a cup-shaped border.		
Chaff of the receptacle elongated, spine-pointed	ECHINACEA.	52
Chaff of the receptacle not elongated nor spine-pointed	RUDBECKIA.	53
Pappus none. Achenia not angled	GYMNOLOMIA.	55
Pappus 2–4-awned.		
Achenia winged. Leaves divided. Receptacle elongated	LEPACHYS.	54
Achenia winged. Leaves undivided. Receptacle convex	ACTINOMERIS.	59
Achenia wingless. Awns of the pappus deciduous	HELIANTHUS.	56
Achenia wingless. Awns of the pappus persistent	HELIANTHELLA.	57
Receptacle chaffy at the apex. Achenia ribbed	ANTHEMIS.	74

SUBORDER II. LABIATIFLORÆ. Corolla of the perfect flowers 2-lipped; the outer lip 3-lobed, the inner 2-lobed.

Herb stemless. Scape 1-flowered. Flower nodding	CHAPTALIA.	87

SUBORDER III. LIGULIFLORÆ. Corolla of all the flowers ligulate.

Pappus none. Achenia many-ribbed	APOGON.	88
Pappus scaly. Flowers blue	CICHORIUM.	89
Pappus scaly and bristly.		
Scales of the pappus 5, with 5 intermediate bristles	KRIGIA.	89
Scales of the pappus and bristles numerous	CYNTHIA.	
Pappus hairy.		
Pappus tawny or dirty white.		
Flowers erect, rose-color. Leaves filiform	LYGODESMIA.	93
Flowers erect, yellow. Achenia beakless	HIERACIUM.	91
Flowers erect, yellow. Achenia long-beaked	PYRRHOPAPPUS.	95
Flowers nodding, whitish or purplish	PRENANTHES.	92

		No.
Pappus clear white (except in one Mulgedium).		
Achenia conspicuously beaked.		
Achenia ribbed. Stemless herbs	TARAXACUM.	94
Achenia flat. Stems leafy	LACTUCA.	96
Achenia beakless or nearly so.		
Flowers blue. Achenia slightly beaked	MULGEDIUM.	96
Flowers yellow. Achenia beakless	SONCHUS.	97

SUBORDER I. TUBULIFLORÆ.

TRIBE I. VERNONIACEÆ. *Heads discoid; the flowers all tubular and perfect: branches of the style terete, filiform, hairy all over; the stigmatic lines only on the lower part.* — *Herbs, with alternate leaves and purple flowers.*

1. VERNONIA, Schreb. IRON-WEED.

Heads many-flowered, the flowers all equal and tubular. Involucre shorter than the flowers; the scales closely imbricated in several rows. Receptacle naked. Achenia cylindrical, ribbed. Pappus double; the exterior consisting of very short scale-like bristles, the interior of copious capillary bristles. — Perennial herbs, with alternate leaves, and corymbose purple flowers.

1. **V. oligophylla,** Michx. Stem nearly naked; leaves rough above, pubescent beneath, denticulate; those at the base large, oval or oblong, the others small, distant, lanceolate; corymb few-flowered, spreading; involucre bell-shaped, the scales lanceolate, acuminate, fringed. — Damp pine barrens. July. — Stem 2° high, sparingly branched.

2. **V. Noveboracensis,** Willd. Stem more or less pubescent, branched above; leaves lanceolate, serrate, mostly roughish above, smooth or pubescent beneath; corymbs spreading; involucre hemispherical, the scales fringed, ovate, ending in a long filiform point, or simply acute. — River banks and low ground. July – Sept. — Stem 3° – 6° high. Scales of the involucre purple, and usually covered with web-like hairs.

Var. **latifolia,** Gray. Stem 2° – 3° high; lower leaves oval or oblong, coarsely serrate, paler beneath, the upper lanceolate, entire; scales of the involucre fringed, acute. — Dry woodlands, Georgia and Florida. July.

3. **V. Baldwinii,** Torr. Tomentose; stem 2° – 3° high; leaves ovate-lanceolate, acuminate, serrulate; heads rather small and crowded, globose, canescent; scales of the involucre appressed, with spreading or recurved tips; achenia pubescent. — W. Tennessee (*Gattinger*), and westward.

4. **V. altissima,** Nutt. Stem 4° – 10° high, smooth; leaves lanceolate or oblong, the lower coarsely serrate, mostly glabrous; corymbs spreading; heads scattered, the scales smooth, obtuse, appressed; achenia slightly hispid. — Low ground, chiefly in the upper districts. July – August.

5. **V. fasciculata,** Michx. Stem slender, smooth, 2° – 5° high, very leafy; leaves linear-lanceolate, varying to oblong, acuminate, smooth above, puncticulate; heads crowded; scales of the involucre downy on the margins, acute; achenia smooth. — River banks, Tennessee, and westward. August.

6. **V. angustifolia,** Michx. Stem slender, smooth or hairy, very leafy; leaves linear or linear-lanceolate, smoothish, or pubescent and roughish, the lowest ones sparingly denticulate, the upper entire, with the margins revolute; corymbs mostly umbel-like; involucre bell-shaped; the scales lanceolate, fringed, acute or conspicuously mucronate. — Dry pine barrens, Florida to North Carolina, and westward. June – August. — Stem 2° – 3° high.

Var. **pumila,** Chapm. Low (6′ – 12′), smoothish; leaves short; heads 3 – 7, loosely corymbose; involucre smooth; pappus yellowish; achenium smooth. — Wet pine woods, South Florida. Nov.

2. STOKESIA, L'Her.

Heads many-flowered; the marginal flowers much larger, deeply split on the inside, and ray-like. Involucre subglobose, bracted, the outer scales prolonged into a leafy bristly-fringed appendage, the inner ones lanceolate and entire. Receptacle naked. Achenia short, 3 – 4-angled, smooth. Pappus composed of 4 – 5 filiform chaffy deciduous scales. — A sparingly branched downy-stemmed perennial. Leaves smooth, lanceolate, entire, the upper ones sessile, and, like the bracts, fringed at the base, the lowest narrowed into a slender petiole. Heads few or solitary, large, terminal. Flowers blue.

1. **S. cyanea,** L'Her. — Wet pine barrens, South Carolina, and westward, very rare. — Stems 1° – 1½° high. Heads 1′ wide.

3. ELEPHANTOPUS, L. Elephant's-foot.

Heads 3 – 5-flowered, crowded in terminal 3-bracted clusters. Flowers all equal and similar. Involucre compressed; scales 8, in 2 rows, dry, oblong, acute, dotted. Receptacle naked. Corolla deeply split on one side, palmate. Achenia oblong, ribbed, hairy. Pappus bristly from a dilated base, double or single — Erect hairy corymbose-branched perennials, with alternate ample leaves, and purple or white flowers.

1. **E. Carolinianus,** Willd. Stem leafy, hairy; leaves thin, oval or oblong, incurved-serrate, hairy, tapering into a petiole; bracts ovate, longer than the heads; scales of the involucre slightly hairy. — Damp shady soil. July – August. — Stem 1° – 2° high. Leaves 3′ – 6′ long, 2′ – 4′ wide. Flowers purple.

2. **E. tomentosus,** L. Rough-hairy; stem nearly naked; radical leaves spreading, obovate-oblong, narrowed into a petiole; stem leaves (1 – 2) small, lanceolate; bracts ovate or cordate, usually shorter than the heads; scales of the involucre very hairy. — Dry sandy soil. June – August. — Stem 1° – 2° high. Radical leaves 4′ – 10′ long, 2′ wide, spreading on the ground. Flowers pale purple.

3 **E. nudatus,** Gray. Sparsely hirsute, and dotted with minute resinous atoms; stem (6′ – 18′ high) with 3 or 4 short obovate leaves at the base, and a smaller one below the branches of the cyme; bracts broad-ovate, barely acute, rather shorter than the heads; scales of the involucre smooth, cuspidate; scales of the pappus abruptly dilated at the base. — Damp ground near the coast. July – Sept.

TRIBE II. EUPATORIACEÆ. *Heads discoid; the flowers all tubular and perfect: branches of the style, usually elongated, club-shaped, minutely pubescent; the stigmatic lines obscure. — Flowers white, blue, or purple.*

4. AGERATUM, L.

Heads many-flowered. Involucre nearly hemispherical; the scales numerous, imbricated. Receptacle naked or chaffy. Achenia 5-angled. Pappus composed of 5 – 10 distinct scales, or a mere border. — Leaves opposite, toothed. Heads in close corymbs. Flowers blue or purple.

1. **A. littorale,** Gray. Stem diffuse, somewhat shrubby at the base, smooth; leaves ovate, abruptly contracted into a slender petiole; corymbs few-flowered; receptacle naked; pappus a whitish truncated margin. — South Florida. — Stem 1° – 2° long. Flowers blue.

2. **A. conyzoides,** L. Leaves ovate, rhombic, or cordate, on rather long petioles; scales of the pappus 5, slightly serrate, awn-pointed from a broad base. — Wet places near Savannah, Georgia. May. — Pubescence and form of the leaves variable. Flowers white or blue.

5. HARTWRIGHTIA, Gray.

Heads few-flowered. Scales of the involucre in 2 rows, linear, obtuse. Receptacle naked. Corolla dilated above, 5-toothed. Anthers appendaged. Achenia 5-angled. Pappus none. — A glabrous perennial herb. Stem corymbose above. Leaves alternate, obtuse, entire, obscurely veined, the lower oblong, tapering into a long margined petiole, the upper few, small and distant, linear. Heads cymose, pedicelled. Flowers white, resinous-punctate, like the achenia and involucre.

1. **H. Floridana,** Gray. — Sphagnous marshes, Volucia County, Florida (*Wright, Webster*). — Stem 2° – 3° high. Leaves, with the petiole, 6′ – 12′ long.

6. SCLEROLEPIS, Cass.

Heads many-flowered. Scales of the involucre linear, imbricated in 2 rows, equal. Receptacle naked. Corolla 5-toothed. Achenia 5-angled. Scales of the pappus 5, almost horny, oval. — A smooth aquatic perennial herb, with whorled linear leaves, and 1 – 3 heads of purple flowers terminating the stem or peduncle-like branches.

1. **S. verticillata,** Cass. — Shallow ponds. July. — Stems ascending, 1° high. Leaves 5 – 6 in a whorl. Heads ½′ wide.

7. CARPHEPHORUS, Cass. (LIATRIS, *Ell.*)

Heads many-flowered. Scales of the involucre imbricated in 3 – 5 rows, ovate or lanceolate, appressed. Receptacle chaffy. Achenia 10-ribbed Pappus of numerous unequal bearded bristles. — Erect perennial herbs. Leaves alternate. Heads corymbed. Flowers purple.

1. **C. Pseudo-Liatris,** Cass. Pubescent and somewhat hoary; stem simple, rigid; leaves linear, appressed, the lowest crowded, elongated; corymb small, dense, mostly simple; pedicels bracted; scales of the involucre lance-

olate, acute, hairy. — Open grassy pine barrens, Florida, and westward Sept. — Stem 6′ – 18′ high. Heads rarely racemose.

2. **C. tomentosus,** Torr. & Gray. Stem simple, tomentose; leaves smooth or hairy, gland-pointed; the lowest oblong or lanceolate, 3-ribbed, narrowed into a long clasping petiole, the others numerous, small, oblong or oval, sessile; corymb loose-flowered; scales of the involucre very tomentose, the outer ones short, ovate, the inner oblong, acute. — Low pine barrens, North and South Carolina. Sept. — Stem 2° high.

3. **C. corymbosus,** Torr. & Gray. Stem tall, hairy; leaves smooth or more or less hairy; the lowest cuneate-lanceolate, obtuse, 1- or obscurely 3-ribbed; the others numerous, small, oblong, sessile; heads about 20, closely corymbed; scales of the involucre nearly smooth and equal, oval, very obtuse, broadly margined. — Margins of swamps, Florida to North Carolina. Sept. — Stem 2° – 4° high.

4. **C. bellidifolius,** Torr. & Gray. Smooth; leaves spatulate-lanceolate, 3-ribbed, obtuse; heads few in a loose corymb; scales of the involucre oblong, obtuse, sparingly fringed on the margins; pappus slightly plumose. — Dry sandy soil, Georgia to North Carolina Sept. — Stems several from the same root, 12′ – 18′ high. Heads sometimes panicled.

8. LIATRIS, Schreb. BUTTON SNAKEROOT.

Heads few- or many-flowered, the flowers all similar and perfect. Scales of the involucre imbricated. Receptacle naked. Corolla 5-lobed. Achenia nearly terete, narrowed at the base, about 10-ribbed. Pappus of numerous plumose or bearded bristles. — Perennial herbs, with tuberous roots and simple stems. Leaves alternate, entire. Heads in spikes or racemes. Flowers purple, often varying into white, commonly dotted with resinous particles.

* *Scales of the involucre with petal-like or leafy tips: pappus plumose.*

1. **L. elegans,** Willd. Heads very numerous in a cylindrical raceme, 4 – 5-flowered; inner scales of the involucre petal-like, purple; stem tomentose; leaves smooth, the lowest lanceolate. — Dry pine barrens, Florida to South Carolina, and westward. August. — Stem 2° high. Heads showy.

2. **L. squarrosa,** Willd. Heads few or numerous, large, many-flowered, cylindrical; scales of the involucre with leafy spreading tips; stem pubescent; leaves smoothish or hairy, long, linear, rigid, 3 – 5-ribbed. — Dry sandy soil. July – August. — Stem 1° – 1½° high. Heads 1′ long, sessile or terminating short branchlets. Corolla lobes hairy.

* * *Scales of the involucre not appendaged.*

+ *Heads 3 – 6-flowered: pappus conspicuously plumose.*

3. **L. Boykinii,** Torr. & Gray. Nearly smooth; stem slender; leaves linear, dotted; heads 3 – 4-flowered, rather closely spiked; scales of the involucre smooth, lanceolate or linear, acuminate and spreading at the apex, as long as the pappus. — Near Columbus, Georgia. August – Sept. — Stem 1° – 2° high. Spike 6′ – 10′ long.

4. **L. tenuifolia,** Nutt. Smooth; stem tall and slender; leaves narrow-linear or filiform, the lowest long and crowded; heads 5-flowered, in a long

close raceme; scales of the involucre barely pointed, smooth, purple. — Dry pine barrens. Sept. — Stem 2° - 4° high. Racemes often 1-sided.

Var. **quadriflora,** Chapm. Leaves involute-filiform, rigid, those of the stem setaceous; heads 4-flowered; scales of the involucre 8, half as long a the disk, often cuspidate. — Banks of the Caloosa River, South Florida Oct.

+- +- *Heads 3 - many-flowered: pappus densely bearded.*

5. **L. pauciflora,** Pursh. Stem pubescent, declining; leaves linear, short, smooth; heads 4 - 5-flowered, in a long 1-sided raceme; scales of the involucre oblong-lanceolate, acute, smooth, or pubescent on the margins. (L. secunda, *Ell.*) — Dry sandy ridges in the middle districts. Sept. — Stem 2° - 3° long.

6. **L. Chapmanii,** Torr. & Gray. Stem tomentose; leaves smooth or pubescent, linear, rather obtuse; the uppermost very short and bract-like; heads mostly 3-flowered, cylindrical, densely spiked; scales of the involucre lanceolate, acuminate, smooth; the outer ones much shorter and broader; corolla and very hairy achenium large. — Dry sandy ridges, Florida. July - Sept. Stem 1° - 2° high.

7. **L. gracilis,** Pursh. Stem tomentose and somewhat hoary; leaves smooth or nearly so, the lowest lanceolate, obtuse, long-petioled, the others linear, appressed or spreading, short; heads small, 3 - 7-flowered, sessile or on slender tomentose and bracted pedicels; scales of the involucre oblong, rather obtuse or mucronate, more or less pubescent; the edges not margined and commonly ciliate. — Sandy pine barrens. Sept. — Stem 1° - 2° high. Varies greatly in the length and direction of the pedicels.

8. **L. graminifolia,** Willd. Stem usually smooth, and striped with greener lines; leaves more or less hairy on the upper surface, and fringed near the base; the lowest lanceolate or linear-lanceolate, elongated, the upper linear; heads in spikes or racemes, often very numerous; involucre broadly obconical, 7 - 14-flowered; the scales oblong-spatulate rounded at the apex, narrowly margined. (L. gracilis, *Ell.*, a more slender form, with the fewer-flowered heads on longer pedicels.) — Light dry soil. Sept. — Stem 2° - 6° high.

9. **L. spicata,** Willd. Smooth; stem very leafy; leaves linear, erect; the lowest very long, obtuse, 3 - 5-ribbed; the uppermost small and bract-like; heads sessile, cylindrical, 8 - 12-flowered, crowded in a long cylindrical spike; scales of the involucre smooth, obtuse, narrow-margined, purple. (L. resinosa, *Nutt.*, a small form with 5-flowered heads.) — Swamps. August - Sept. — Stem rigid, 2° - 5° high. Spikes sometimes 2° - 3° long. Styles elongated.

10. **L. Garberi,** Gray. Hirsute, the rigid leaves at length smooth; heads closely spiked, 6 - 7-flowered; scales of the bell-shaped involucre ovate or oblong, cuspidate, glandular-hirsute; pappus barbellate. — Tampa, Florida (*Garber*).

11. **L. scariosa,** Willd. Stem stout, pubescent; leaves mostly pubescent the lowest large, oblong or lanceolate, obtuse, the upper linear, acute; heads large, 15 - 40-flowered, roundish, sessile or pedicelled; scales of the involucre

spatulate or obovate, rounded at the apex, usually with broad and colored margins; the outer ones with spreading tips. — Dry light soil. Sept. — Stem 3° – 6° high. Heads sometimes 1′ wide.

9. TRILISA, Cass.

Heads few-flowered, cymose-panicled. Involucral scales nearly equal, in three series. Corolla short. Pappus bearded. — Erect perennials. Leaves veiny, mostly serrate. Root fibrous.

1. **T. odoratissima,** Cass. (Hound's Tongue.) Stem herbaceous, smooth; leaves smooth and often glaucous, obtuse; the lowest spatulate-obovate, 3 – 5-ribbed, the upper oval or oblong, small, sessile; heads 7 – 8-flowered, disposed in an ample spreading corymb or panicle. — Flat pine barrens in the lower districts. Sept. — Stem 2° – 3° high. The withering leaves exhale the odor of vanilla.

2. **T. paniculata,** Cass. Stem viscid-pubescent; leaves smooth; the lowest spatulate-lanceolate, the upper lanceolate, sessile, small; heads mostly 5-flowered, in small lateral and terminal corymbs, forming a dense oblong panicle. — With the preceding. Sept. – Oct. — Stem 1° – 2° high.

10. GARBERIA, Gray.

Heads 5-flowered. Involucral scales in 4 – 5 rows, lanceolate, acute. Corolla slender, dilated funnel-shaped at the throat. Receptacle naked. Achenia 10-ribbed. Pappus copious, scabrous. — A branching shrub, with small obovate entire vertical leaves, and showy heads of purple flowers in a dense corymbose cyme.

1. **G. fruticosa,** Gray. — Dry sandy pine barrens, South Florida. — Stem 4° – 6° high. Leaves 1′ or less long. Heads 8″ long.

11. KUHNIA, L.

Heads 10 – 25-flowered. Flowers all similar and perfect. Scales of the involucre few and loosely imbricated in 2 – 3 rows. Receptacle naked. Corolla slender, 5-toothed. Achenium cylindrical, many-striate. Pappus a single row of strongly plumose bristles. — A perennial herb, with lanceolate or linear dotted leaves, and heads of yellowish white flowers in panicled corymbs.

1. **K. eupatorioides,** L. Stem pubescent, or somewhat viscid, mostly branched; leaves toothed or entire, pubescent, or smoothish beneath, the lower ones sometimes opposite; corymbs loose or crowded. — Light dry soil. Sept. — Stem 2° – 4° high.

12. BRICKELLIA, Ell.

Heads few- or many-flowered. Scales of the involucre linear, imbricated, the outer ones shorter. Receptacle flat, naked. Corolla 5-toothed. Achenia cylindrical, 10-striate. Pappus a single row of bearded bristles. — Perennial herbs, with dotted opposite 3-ribbed leaves, and large heads of pale purple flowers, in terminal corymbs.

1. **B. cordifolia,** Ell. Stem erect, tomentose, mostly branching; leaves ovate, serrate, mostly cordate, petioled, the upper ones often alternate; heads large, 30 – 40-flowered; achenia nearly smooth. — Light rich soil, Georgia, Florida, and westward. August. — Stem 2° – 4° high. Flowers showy.

13. EUPATORIUM, Tourn. THOROUGHWORT.

Heads 3 – many-flowered. Involucre cylindrical or bell-shaped, the scales in a single row, or imbricated in 2 – several rows. Receptacle flat, naked. Corolla 5-toothed. Achenia 5-angled, the sides smooth and even. Pappus a single row of slender rough bristles. — Perennial and mostly resinous-dotted herbs, with opposite or whorled leaves, and white or purplish flowers.

§ 1. *Scales of the cylindrical involucre numerous, closely imbricated in several rows, rigid, striate, obtuse: heads many-flowered: flowers blue.*

1. **E. ivæfolium,** L. Herbaceous; stem (3° – 5°) erect, terete, rough-hairy, at length much branched; leaves lanceolate, acute at each end, nearly sessile, 3-nerved, sparingly serrate; corymbs dense; heads 15 – 20-flowered; scales of the involucre very obtuse. — Mississippi, and westward. July – Nov.

2. **E. conyzoides,** Vahl. Shrubby, stem much branched (4° – 6° high), leaves opposite, ovate or ovate-lanceolate, acuminate, 3-nerved, serrate or nearly entire; corymb trichotomous; heads 10 – 20-flowered, receptacle flat; scales of the involucre rounded at the tip; achenium scabrous on the angles. — Coast of South Florida (*Curtiss*).

3. **E. heteroclinium,** Griseb. Pubescent; stem branching above (2° high); leaves opposite, ovate, crenate-serrate, short-petioled; pedicels 1 – 3 in the forks of the branches, longer than the cylindrical many-flowered heads; scales of the involucre smooth, oblong, deciduous; receptacle globular, naked; achenium smooth. — Keys of South Florida. Nov.

§ 2. *Scales of the involucre mostly loosely imbricated in few (rarely single) rows, thin: receptacle flat: heads corymbose (except Nos.* 17 *and* 18).

* *Scales of the involucre purplish, scarious, obtuse, imbricated in several rows, the outer ones much shorter: leaves whorled: flowers purplish.*

4. **E. purpureum,** L. Smooth or pubescent; stem tall, often spotted or dotted; leaves petioled, 3 – 6 in a whorl, varying from lanceolate to ovate, coarsely serrate, roughish; corymbs large, compound; heads 5 – 10-flowered. — Swamps, rarely in dry woods. August – Sept. — Stem 3° – 10° high, solid or hollow, even or grooved.

Var. **amœnum,** Gray. Leaves thin, opposite or ternate, ovate, coarsely unequally and sharply serrate; corymbs loosely flowered; heads 3-flowered. — Woodlands of the upper districts. — Stem 2° – 3° high.

* * *Scales of the involucre (green or white) imbricated in* 2 – 3 *rows, the outer rows shorter: heads* 5 – 20*-flowered: leaves, achenia, etc. dotted with resinous glands: flowers white.*

+ *Heads 5-flowered: leaves undivided, sessile or narrowed into a stalk-like base (except No.* 16).

5. **E. hyssopifolium,** L. Pubescent; leaves opposite, the upper ones alternate, lanceolate or ovate-lanceolate, coarsely serrate or toothed, 3 ribbed

at the base; scales of the involucre lanceolate, obtuse, mucronate, shorter than the flowers. — Varies with the leaves narrow-linear and entire, the lower ones 4 in a whorl, and numerous smaller ones in the axils. — Low ground. Sept. — Stem 2° – 3° high. Leaves rigid, sometimes all alternate.

6. **E. cuneifolium,** Willd. Pubescent; leaves short, obovate-oblong, sparingly serrate near the summit, or entire, 3-ribbed, mostly very obtuse; scales of the involucre obtuse, shorter than the flowers. (E. glaucescens, *Ell.*) — Rich shaded soil, Florida to South Carolina Sept. — Stem 2° – 3° high. Leaves 1′ long, pale and somewhat glaucous on both sides.

7. **E. leucolepis,** Torr. & Gray. Stem simple, virgate, minutely pubescent and roughened; leaves somewhat remote, lanceolate or linear-lanceolate, acute, serrate, very rough on both sides, obscurely 3-ribbed; corymbs ample, hoary; scales of the involucre lanceolate, acuminate, white and scarious at the apex, as long as the flowers. — Flat pine barrens. Sept. — Stem 2° high. Leaves 1′ – 2′ long.

8. **E. tortifolium,** Chapm. Stem pubescent, branching above, 1° – 1½° high; leaves small (1′ – 1½′ long), oblanceolate, entire, vertical, the upper linear; heads crowded; involucral scales erect, acute; pappus rather rigid, longer than the corolla. — Dry pine barrens, Georgia and Florida. Sept.

9. **E. semiserratum,** DC. Tomentose; stem slender, simple or branched above; leaves alternate, opposite, or whorled, lanceolate, acute, strongly serrate, 3-ribbed near the base, tapering into a petiole; corymbs large; scales of the involucre lanceolate, obtuse, shorter than the flowers, scarcely longer than the mature achenia. — Margins of ponds and wet places. Stem 2° high. Leaves 2′ long, strongly veined.

10. **E. scabridum,** Ell. Stem stout, tomentose; leaves opposite, ovate-lanceolate, acute at both ends, thickly and unequally serrate, rough above, tomentose and somewhat glaucous beneath, 3-ribbed from near the base; corymbs ample, dense; scales of the involucre lanceolate, cuspidate, shorter than the flowers. — Low pine barrens, Florida to South Carolina. August. — Stem 2° high. Leaves 1½′ long.

11. **E. rotundifolium,** L. Stem pubescent, mostly simple; leaves short, broadly ovate or roundish, obtusely serrate, roughish, mostly truncate at the base, 3-ribbed and somewhat rugose; corymbs large; scales of the involucre lanceolate, acute, shorter than the flowers. — Low pine barrens. August. — Stem 2° high. Leaves 1′ long.

12. **E. teucrifolium,** Willd. Rough-pubescent; leaves ovate or oblong-ovate, coarsely serrate and sometimes toothed near the base, 3-ribbed; the upper ones small and remote; corymbs dense, depressed in the centre; scales of the involucre lanceolate, mucronate, shorter than the flowers. (E. verbenæfolium, *Michx.*) — Damp soil, Florida, and northward. Sept. — Stem virgate, 2° – 3° high. Leaves 1′ – 1½′ long, the base rounded or truncate. Branches of the corymb alternate.

13. **E. album,** L. Rough-pubescent or hairy; leaves oblong or lanceolate, narrowed at the base, toothed-serrate, strongly veined; corymbs dense; scales of the involucre lanceolate, smooth, or the outer ones pubescent, longer

than the flowers, the acuminate or mucronate tips white and scarious. — Dry sandy soil. Sept. — Stem 1° - 2° high. Leaves 2′ long.

14. **E. altissimum,** L. Stem tomentose; leaves opposite, lanceolate, acute, pubescent, strongly 3-ribbed, sharply serrate above the middle, narrowed at the base; corymb dense, hoary; scales of the involucre shorter than the flowers, linear-oblong, obtuse. — Sterile soil, North Carolina, and westward. Sept. — Stem 5° - 7° high. Leaves 3′ - 4′ long.

15. **E. sessilifolium,** L. Smooth; leaves long, lanceolate, acuminate, serrate, rounded and closely sessile at the base; corymb tomentose; scales of the involucre oblong, obtuse. — Open woods in the upper districts, Alabama, and northward. Sept. — Stem 2° - 4° high, mostly branching above. Leaves 3′ - 6′ long, thin and veiny.

16. **E. mikanioides,** Chapm. Stem ascending from a creeping base, branching and tomentose above; leaves opposite, long-petioled, deltoid, glandular-serrate or toothed, truncate or abruptly acute at the base, resinous-dotted above, pubescent on the veins beneath; the petioles somewhat connate; corymb ample; scales of the involucre about 10, lanceolate, acute; anthers slightly exserted; achenia 5-angled, glandular. — Low sandy places on the coast of West Florida. Sept. — Stem 1°-2° high. Leaves 1′ - 1½′ long, somewhat fleshy.

+ + *Heads in panicled racemes, 3 - 5-flowered: leaves pinnately divided.*

17. **E. fœniculaceum,** Willd. Stem tall, pubescent, paniculately much branched; divisions of the leaves filiform, smooth; heads 3 - 5-flowered; scales of the involucre smooth, margined, notched at the apex, mucronate; achenia smooth. — Chiefly in old fields. Sept. - Oct. — Stem 3° - 8° high. Flowers white.

18. **E. coronopifolium,** Willd. Pubescent; stem paniculately branched; divisions of the leaves linear; heads crowded, 5-flowered; scales of the involucre mucronate, pubescent, margined; achenia smooth. — Dry sandy soil. Sept. - Oct. Stem 2° - 4° high. Flowers white.

+ + + *Heads 6 - 15-flowered: leaves opposite.*

++ *Leaves sessile or perfoliate.*

19. **E. pinnatifidum,** Ell. Pubescent; leaves lanceolate, pinnately lobed or pinnatifid, the uppermost linear and entire, the lowest ones whorled; heads 6 - 9-flowered; scales of the involucre lanceolate, acute. — Dry soil, Florida to North Carolina. Sept. — Stem 2° - 3° high.

20. **E. perfoliatum,** L. Pubescent or hairy; leaves lanceolate, acuminate, crenate-serrate, rugose, sessile and clasping at the base, or connate-perfoliate; heads about 10-flowered; scales of the involucre linear-lanceolate, acute. — Low ground. Sept. — Stem stout, 2° - 3° high. Leaves 6′ - 8′ long.

++ ++ *Leaves petioled.*

21. **E. serotinum,** Michx. Pubescent; stem tall, mostly branching; leaves long-petioled, ovate-lanceolate, acuminate, sharply serrate, 3-ribbed; heads 12 - 15-flowered; scales of the involucre linear-oblong, obtuse; achenia smooth. — Rich soil. Sept. — Stem 3° - 6° high. Leaves 4′ - 9′ long.

22. **E. villosum,** Swartz. Stem tomentose, branching; leaves short-petioled, ovate, obtuse or mucronate, rusty-pubescent, denticulate or entire, 3-ribbed; corymb dense; heads 10–15-flowered; scales of the involucre about 10, equal, linear, obtuse, shorter than the flowers; anthers slightly exserted; achenia hispid; pappus shorter than the flowers. — South Florida. — Leaves rigid, 1′–1½′ long.

* * * *Scales of the involucre (green) equal, in a single row: heads* 8–30-*flowered: leaves, achenia, etc. not resinous-dotted: leaves on slender petioles.*

23. **E. ageratoides,** L. Smooth; leaves thin, ovate or slightly cordate, acuminate, coarsely and sharply serrate, 3-ribbed; heads 10–20-flowered; scales of the involucre linear, acutish, slightly pubescent; achenia smooth. — Rich shaded soil. Sept. — Stem commonly branching, 2°–3° high. Leaves 3′–5′ long. Flowers white.

24. **E. aromaticum,** L. Pubescent; leaves thickish, ovate, or the lowest cordate, crenate-serrate, roughish, on short petioles, barely acute; heads 8–15-flowered; scales of the involucre linear; achenia smooth. — Dry open woods, common. Sept. — Stem 2° high. Leaves 1′–2′ long. Flowers white.

25. **E. incisum.** Stem long, slender, smoothish, branching; leaves small, ovate, tapering to the obtuse apex, abruptly contracted at base, coarsely and unequally serrate, 3-nerved, twice as long as the very slender petioles; corymbs loose, compound, pubescent; heads 12–14-flowered; corolla white, achenium slightly pubescent. — Clear Water Harbor and Manatee, Florida. Nov. — Stem 2°–3° long. Leaves 1′–1½′ long. Flowers very fragrant.

26. **E. incarnatum,** Walt. Pubescent; stem slender, reclining, diffusely branched; leaves on long petioles, deltoid, acuminate, truncate or cordate at the base, coarsely serrate; corymbs numerous, small; heads about 20-flowered; scales of the involucre linear, acute, 2-ribbed; achenia hispid. — Rich shaded soil, Florida to North Carolina. Sept. — Stem 2°–4° long. Leaves 1′–2′ long. Flowers pale purple.

§ 3. *Scales of the involucre nearly equal, imbricated in* 2–3 *rows: heads many-flowered: receptacle conical, naked.* — CONOCLINIUM.

27. **E. cœlestinum,** L. Smoothish; leaves deltoid-ovate, the lowest often cordate, acuminate, coarsely serrate; heads 30–60-flowered; flowers bluish purple. — Rich soil. Sept. — Stem 2° high.

14. MIKANIA, Willd.

Heads 4-flowered. Scales of the involucre 4. Receptacle naked, flat. Anthers partly exserted. Corolla, achenia, etc. as in Eupatorium. — Chiefly climbing herbs, with opposite mostly cordate leaves, and whitish flowers.

1. **M. scandens,** Willd. Smooth or pubescent; leaves on slender petioles, acuminate, toothed or entire; corymbs numerous, on short axillary branches or peduncles; scales of the involucre linear, acute; achenia minutely glandular. — Swamps. August–Sept. — Stem twining.

TRIBE III. ASTEROIDEÆ. *Heads discoid or radiate: the rays pistillate: branches of the style, in the perfect flower, flattened, linear or lanceolate, equally pubescent above on the outside: the conspicuous stigmatic lines terminating where the exterior pubescence commences.*

15. SERICOCARPUS, Nees.

Heads 12–15-flowered; the ray flowers about 5, white, pistillate; those of the disk tubular and perfect. Involucre somewhat cylindrical or club-shaped; the scales cartilaginous, whitish, closely imbricated in several rows, with greenish and more or less spreading tips. Receptacle pitted, toothed. Achenia short, obpyramidal, silky. Pappus simple, composed of numerous capillary bristles. — Perennial herbs. Leaves alternate. Heads crowded in a dense corymb. Disk flowers yellow.

1. **S. conyzoides,** Nees. Stem slightly pubescent, corymbose above; nearly terete; leaves ciliate on the margins, otherwise smooth, the lower ones spatulate-oblong, serrate above the middle, the upper oblong or lanceolate and entire; involucre top-shaped; pappus rust-color. — Dry gravelly or sandy soil, in the middle and upper districts. August. — Stem 1°–2° high.

2. **S. solidagineus,** Nees. Smooth; stem angled; leaves lanceolate or linear, obtuse, entire, the lowest spatulate; involucre top-shaped; pappus white. — Low ground in the upper districts. August. — Stem slender, 2° high. Heads smaller than in the last.

3. **S. tortifolius,** Nees. Closely pubescent; leaves short, obovate, rarely serrate, vertical; involucre top-shaped; the scales oblong and slightly spreading at the tips; pappus copious, white. — Sandy pine barrens, in the middle and lower districts. August. — Stem 1°–2° high. Leaves 1′ long.

16. ASTER, Tourn. ASTER, STARWORT.

Heads many-flowered; the rays (white, blue, or purple) in a single series, pistillate. Scales of the involucre more or less imbricated, mostly with herbaceous or leafy tips. Receptacle flat, pitted. Achenia usually compressed. Pappus a single row of numerous rough capillary bristles. — Perennial (rarely annual) herbs. Leaves alternate. Disk flowers yellow, often changing to purple.

§ 1. BIOTIA. — *Involucre obovate-bell-shaped: the scales (pale) closely imbricated, and nearly destitute of herbaceous tips: achenia somewhat 3-angled: bristles of the pappus rigid: leaves large, the lower ones cordate: heads corymbed.*

1. **A. corymbosus,** Ait. Stem slender, smooth; leaves on slender petioles, thin, coarsely serrate, acuminate; the lower ones cordate, the upper oblong; involucre shorter than the disk, the scales obtuse; rays 6–9, white. — Shady woods in the upper districts. Sept.–Oct. — Stem 1°–2° high. Leaves 2′–4′ long. Corymbs loose.

2. **A. macrophyllus,** L. Stem stout, rough-pubescent; leaves large, rather thick, rough, mucronate-serrate, acute; the lowest broadly cordate, on slender naked petioles; the upper ovate, on short and winged petioles; invo-

lucre nearly as long as the disk; the exterior scales rigid, with spreading fringed tips; rays about 10, pale purple. — Low shady woods, in the upper districts. Sept. — Stem 1½° – 2° high. Leaves 4′ – 6′ long, 2′ – 4′ wide.

§ 2. HELEASTRUM. — *Heads few and racemose, or solitary, large: scales of the involucre nearly equal, linear, rigid: achenia nearly glabrous: pappus rigid: leaves linear, entire, or spinulose along the margins.*

3. **A. paludosus,** Ait. Stem slightly roughened; leaves linear, rigid, acute, partly clasping, often fringed near the base; heads 3 – 8, racemed or corymbed; involucre hemispherical, as long as the disk; the scales nearly equal, linear-spatulate, with mucronate green spreading tips. — Low ground, Florida to North Carolina. Sept. – Oct. — Stem 1° – 2° high. Leaves 2′ – 4′ long. Heads ½′ – ¾′ wide. Rays numerous, deep blue.

4. **A. spinulosus,** Chapm. Rhizoma tuberous; stem simple, pubescent; leaves rigid, narrow-linear, appressed, the margins fringed with bristly hairs; the lowest numerous and elongated; heads 4 – 8 in a simple spike; involucre bell-shaped; scales equal, lanceolate-subulate, rigid, erect, spine-pointed, bristly near the base; achenia strongly ribbed. — Damp pine barrens, West Florida, near the coast. June – August. — Stem 10′ – 15′ high. Lowest leaves 6′ – 12′ long, 1″ – 3″ wide; the upper ones 1′ long. Heads ⅓′ wide. Rays 12 – 15, pale blue. Pappus tawny.

5. **A. eryngiifolius,** Torr. & Gray. Rhizoma tuberous; stem simple, pubescent; leaves lanceolate-linear, the lowest mostly entire; the others erect, and fringed with spiny teeth; heads very large, solitary, or 3 – 4 in a loose raceme; involucre hemispherical; scales very numerous, lanceolate, tapering into a long slender recurved tip; achenia short, oblong. — Low pine barrens, Florida. June – August. — Stem 1° – 2° high. Lowest leaves 4′ – 6′ long. Heads 1′ or more in diameter. Rays numerous, white.

§ 3. CALLIASTRUM. — *Scales of the involucre imbricated in several rows, coriaceous, usually with herbaceous spreading tips: rays 12 or more: achenia nearly smooth: pappus of unequal rather rigid bristles, somewhat thickened upward: leaves rigid, none of them cordate: heads large and showy.*

6. **A. mirabilis,** Torr. & Gray. Rough-pubescent; stem corymbosely branched above; leaves ovate, mucronate-serrate, sessile; the lowest abruptly narrowed into a petiole; involucre hemispherical; the scales oblong-linear, obtuse and recurved at the summit; achenia nearly smooth, striate. — Columbia, South Carolina (*Prof. Gibbes*). Sept. — Stem 1° – 2° high. Stem leaves 1′ – 3′ long. Rays about 20, blue or violet, elongated.

7. **A. spectabilis,** Ait. Stem corymbose and glandular-pubescent above; leaves oblong-lanceolate, rough on the upper surface, sessile and entire; the lowest tapering into a petiole, and sparingly serrate; heads not numerous, single, terminating the branches; involucre nearly hemispherical, as long as the disk; the scales linear-oblong, with obtuse and spreading glandular tips. — North Carolina (*Curtis*). Sept. – Oct. — Rhizoma slender. Stem 1° – 2° high. Leaves 2′ – 4′ long. Heads ½′ in diameter. Rays about 20, 1′ long, deep violet.

8. **A. gracilis,** Nutt. Stem slender, slightly pubescent, corymbose at the summit; leaves rough, oblong, partly clasping, entire; the lowest ob-

scurely crenate and narrowed into a petiole; heads corymbose; involucre (whitish) obconical, as long as the disk; the scales very unequal, acute, the lower ones much shorter, green and slightly spreading at the tips. — North Carolina and Tennessee. Sept. — Stem 1°-2° high. Leaves 1′-2′ long. Heads smallest of this group. Rays about 12, violet.

9. **A. surculosus,** Michx. Stems several from a creeping caudex, slender, pubescent above; leaves lanceolate or linear-lanceolate, acute, smooth, the margins rough and sometimes sparingly serrate, clasping; the lowest narrowed into a petiole; heads solitary, or 3-5 in a simple corymb; involucre broadly top-shaped, nearly as long as the disk; the scales linear-spatulate, with abruptly pointed spreading herbaceous tips; the outer ones lanceolate and leaf-like. — Low ground, Georgia to North Carolina. Sept. — Stem ½°-1½° high. Lowest leaves 4′-6′ long. Heads ½′ wide. Rays numerous, violet.

10. **A. Curtisii,** Torr. & Gray. Smooth throughout; stem simple, slender; leaves membranaceous, lanceolate, entire or slightly serrate, acuminate, sessile; heads in a simple or slightly compound terminal raceme; scales of the involucre linear-spatulate, coriaceous, the green and spreading tips barely acute; rays purple. — Mountains of North Carolina. — Stem 2°-3° high. Leaves 3′-4′ long. Heads ½′-¾′ in diameter.

§ 4. ASTER proper. — *Scales of the involucre imbricated in various degrees, with herbaceous tips: rays numerous: achenia flattened: pappus of soft capillary bristles, not thickened upward: autumnal plants.*

* 1. *Leaves uniform, small, sessile, entire, silky or silvery on both sides, mucronate: scales of the involucre imbricated in 3-several rows: rays violet-purple.*

11. **A. sericeus,** Vent. Stem with numerous branches, bearing the large heads (single or 3 in a cluster) at their summits; leaves oblong-lanceolate, silvery; scales of the involucre leafy and spreading; achenia smooth. — A western species, a form of which, with narrower and less silvery leaves and scales, occurs on the mountains of Georgia and Tennessee. — Stem 10′-20′ high. Leaves ½′-1′ long. Heads showy.

12. **A. concolor,** L. Stem mostly simple, slender, bearing towards the summit, the middle-sized heads in a long often compound raceme; leaves lanceolate, silky when young; the lowest ones oblong; scales of the obovoid involucre lanceolate, appressed, the subulate tips spreading; achenia silky. — Dry sandy soil, Florida, and northward. — Root sometimes tuberous. Stem 1°-3° high. Leaves erect, ½′-1′ long.

* 2. *Leaves rough, all sessile or clasping and entire: heads chiefly solitary, terminating the branchlets: scales of the obovoid or bell-shaped involucre imbricated in several rows, coriaceous, with herbaceous slightly spreading tips: rays purplish blue: achenia hairy.*

+ *Leaves very small, sessile: heads small: scales of the involucre spatulate.*

13. **A. squarrosus,** Walt. Stem slender, diffuse; leaves oblong or triangular-ovate, reflexed, very rough, sessile; the lowest spatulate. — Dry soil, Florida to North Carolina. — Stem 1°-2° high. Lowest leaves ½′ long, the others 2″-3″ long.

14. **A. adnatus,** Nutt. Stem with the slender branches erect; leaves oblong, very rough, the midrib partly adnate to the stem, free at the apex; the lowest wedge-obovate, free. — Sandy barrens, Florida and Alabama. — Stem 1° – 2° high. Heads smaller than in the preceding.

+ + *Leaves all clasping and auricled at the base: heads large: scales of the involucre linear.*

15. **A. patens,** Ait. Stem pubescent, loosely panicled above; leaves ovate-oblong, with very rough and wavy margins; those on the slender spreading branchlets very small. — Var. PHLOGIFOLIUS. Leaves larger, thinner, and less roughened, contracted below the middle; heads often racemose on the short lateral branches. — Dry soil, chiefly in the upper districts. — Stem 1° – 3° high. Leaves 1′ – 2′ (in the var. 3′ – 6′) long. Heads showy.

* 3. *Leaves (and stems) smooth: the lowest tapering into a petiole, the others sessile or clasping: heads middle-sized, showy: scales of the obovoid involucre whitish, the short green tips scarcely spreading: rays bright blue: achenia mostly smooth.*

16. **A. lævis,** L. Very smooth and often glaucous; stem rigid, panicled above, bearing the showy heads on short rigid branchlets; leaves oblong or lanceolate, coriaceous, mostly entire and rough on the margins; the upper ones sessile or clasping; scales of the involucre rigid, appressed, with abruptly pointed herbaceous tips. — Open woods in the upper districts. — Stem 2° – 3° high.

17. **A. virgatus,** Ell. Stem very smooth, straight, simple or branching; heads racemose; leaves linear-lanceolate, entire, rough on the margins, partly clasping, the lowest broader and narrowed at the base; scales of the involucre lanceolate, acuminate, the outer ones spreading. — Upper districts of Georgia, and westward. — Stem 3° – 4° high. Lower leaves 3′ – 6′ long; those of the branches small and numerous.

18. **A. concinnus,** Willd. Stem nearly smooth, somewhat loosely corymbose; the branches virgate, dichotomous-paniculate; leaves lanceolate, partly clasping, remotely and sharply serrate, with scabrous margins, those of the branchlets oblong, entire; scales of the involucre linear, acute, closely imbricated. (A. cyaneus? *Ell.*) — North Carolina (*Schweinitz*). — Stem 2° – 3° high. Achenia pubescent.

* 4. *Lower leaves large, cordate, on long petioles: heads middle-sized or small, racemed or panicled: scales of the involucre somewhat membranaceous, with short green tips: rays blue or violet.*

+ *Leaves entire, or nearly so.*

19. **A. azureus,** Lindl. Stem roughish, rigid, racemose-compound at the summit, the branches slender; leaves rigid, rough; the lowest ovate-lanceolate or oblong; the upper lanceolate or linear, sessile; those of the branches subulate, appressed; scales of the obconical involucre closely imbricated, abruptly acute. — Dry soil in the upper districts of Georgia, and northward — Stem 2° – 3° high. Rays bright blue.

20. **A. Shortii,** Hook. Stem smoothish, slender, racemose-panicled at the summit; leaves nearly smooth, ovate-lanceolate, acute; those of the stem

all on slender petioles, and obtuse or cordate at the base, commonly entire; those of the branches oblong, sessile; scales of the bell-shaped involucre linear, closely imbricated, rather obtuse, shorter than the disk. — Mountains of Georgia, and westward. — Stem 2° – 4° high. Rays violet-blue.

21. **A. undulatus,** L. Pubescent; stem racemose-panicled above; leaves varying from lanceolate to broadly ovate, often wavy or slightly serrate on the margins, roughish on the upper surface; the lowest on long and slender petioles, which are dilated and clasping at the base; the upper on broadly winged petioles, or sessile and clasping; scales of the obovoid involucre linear, appressed, acute. (A. scaber, *Ell.*, with the smaller leaves very rough on both sides.) — Woods, common and very variable. — Stem 2° – 3° high. Heads small. Rays pale blue.

+ + *Lowest leaves conspicuously serrate: heads small.*

22. **A. cordifolius,** L. Stem commonly smooth, racemose-panicled above; leaves smooth, or rough above and pubescent beneath, all cordate, serrate, and slender-petioled, or the uppermost on short winged petioles, or sessile and entire; heads very numerous in panicled racemes; scales of the obconical involucre loosely imbricated, with obtuse or slightly pointed green tips. — Open woods, in the upper districts. — Stem 1° – 3° high. Leaves commonly thin. Rays pale violet.

23. **A. sagittifolius,** Willd. Stem nearly smooth, racemose-branched above; leaves ovate-lanceolate, acuminate, pubescent; the lowest cordate, on long and mostly margined petioles; the upper abruptly contracted into a winged petiole; those of the branches lanceolate, acute at both ends, entire; heads in dense compound racemes; scales of the oblong involucre rather loosely imbricated, linear-subulate, the tips green and spreading. — Rich woods, Florida, and northward. — Stem 2° – 3° high. Heads more crowded than those of the preceding. Rays purple.

* 5. *Leaves linear or lanceolate, entire, sessile; radical ones spatulate-lanceolate, serrate: heads small and numerous, racemed: scales of the involucre in several rows, rigid, with spreading or recurved green tips.*

24. **A. ericoides,** L. Smooth; stem much branched; leaves linear-lanceolate, acute at each end; those of the branches subulate; heads racemose, mostly on one side of the spreading branches; scales of the involucre broadest at the base, with acute or subulate tips. — Var. VILLOSUS. Stem and broader leaves rough-hairy, and the smaller heads in shorter and more dense racemes. — Var. PLATYPHYLLUS. Stem (3° – 4°) and larger leaves clothed with soft white hairs; heads larger. — Dry soil, Florida, and northward. — Stem 1° – 2° high Rays white or pale blue.

Var. **Reevesii,** Gray. Stem 1° – 2° high, branching from near the base; smooth, or papillose-hispid; leaves linear, the lowest hispid-ciliate; heads 3″ – 4″ long, on thickly bracted pedicels. — Nashville, Tennessee.

25. **A. polyphyllus,** Willd. Nearly glabrous; stem 4° – 5° high, much branched; leaves linear-lanceolate, long-acuminate, the lower sharply serrate, 3′ – 5′ long; heads racemose at the end of the branches; involucre scales linear or linear-subulate, appressed; rays short, white. — North Carolina (*Gray*), and northward.

26. **A. multiflorus,** Ait. Whitish-pubescent; stem very leafy, and much branched; leaves linear, obtuse at each end, often bristle-pointed, spreading or recurved, the upper ones sessile or somewhat clasping; heads densely racemose on the short and very leafy branches, or sometimes solitary at their summits; scales of the involucre broadest at the apex, obtuse or short-pointed. — Dry sterile soil, in the upper districts. — Stem 1° – 2° high. Leaves about 1′ long. Rays white.

* 6. *Leaves linear, lanceolate, or oblong, sessile, usually narrowed at the base: heads small or middle-sized: scales of the involucre membranaceous, with appressed or slightly spreading tips: rays pale purple or white.*

+- *Heads small.*

27. **A. racemosus,** Ell. Rough-pubescent; stem much branched, bearing the small heads in a spiked raceme near the summit of the slender erect branches; leaves linear, sessile, rigid; scales of involucre smooth, linear-subulate; the inner ones as long as the disk; rays very short. — Damp rich soil, Paris Island, South Carolina — Stem 2° high. Rays pale purple.

28. **A. dumosus,** L. Smoothish; stem slender, racemose-panicled, bearing the small heads chiefly on slender and very leafy branchlets; leaves linear, entire, spreading or reflexed; the lowest spatulate-lanceolate, serrate; those of the branches short, linear-oblong, and mostly obtuse scales of the involucre closely imbricated in 3 – 6 rows, with obtuse green tips. — Dry or damp soil, common, and running into several varieties. — Stem 2° – 3° high. Rays pale purple or white.

29. **A. vimineus,** Lam. Stem slender, pubescent, racemose-branched; leaves long, linear-lanceolate, sparingly serrate, tapering into a long and slender point; the uppermost entire; heads in close racemes along the spreading branches; scales of the involucre narrow-linear, acute, imbricated in 3 – 4 rows. — Low ground in the upper districts. — Stem 2° – 3° high. Rays pale purple or white.

30. **A. diffusus,** Ait. Pubescent or hairy; stem simple, and bearing the small heads in a long and leafy compound raceme, or diffusely branched, with the heads scattered along the branches, or in short few-flowered racemes; leaves varying from linear-lanceolate to wedge-obovate, acute at each end, sharply serrate in the middle; the lowest spatulate, the uppermost entire; scales of the involucre linear, acute. — Low grounds and banks, common and very variable. — Stem 1° – 4° long. Rays white or purplish.

Var. **bifrons,** Gray. Smooth throughout; stem simple, slender, 2° – 3° high; leaves thin, lanceolate, remotely serrate, 4′ – 6′ long; heads in small axillary and terminal panicles. — Shaded river banks, Georgia and Tennessee.

+- +- *Heads middle-sized.*

31. **A. paniculatus,** Lam. Stem smooth or pubescent in lines, corymbose or racemose-branched; heads in short racemes; leaves lanceolate, acute or acuminate at both ends, smooth, rough on the margins, the lower ones sharply serrate; scales of the involucre linear-subulate, loosely imbricated. — Low ground, Florida, and northward. — Stem 3° – 6° high, sparingly or diffusely branched. Leaves 2′ – 4′ long. Rays pale blue.

* 7. *Leaves lanceolate or oblong, sessile, the upper ones more or less clasping: heads large or middle-sized: scales of the involucre nearly equal, with spreading green tips: rays mostly large and numerous, blue or purple.*

32. **A. Novi-Belgii,** L. Stem nearly smooth, corymbose-panicled above; leaves long, lanceolate, acuminate, shining above, the lowest narrowed at the base, and serrate in the middle, the upper sessile or partly clasping; heads solitary or few on the rigid branchlets; scales of the involucre linear, with green and subulate, or broader and abruptly pointed spreading tips; rays purplish blue. — Swamps, Georgia, and northward. — Stem 1° - 3° high. Leaves 3′ - 6′ long. Heads showy.

33. **A. Elliottii,** Torr. & Gray. Stem stout, smooth, very leafy, corymbose-branched; the branches short and pubescent in lines; leaves large, oblong-lanceolate, acute, serrate, narrowed toward the base, and partly clasping; the lowest spatulate oblong, obtuse, crenate; heads corymbed at the ends of the branches; scales of the involucre subulate, with long and spreading tips; rays pale purple. (A. puniceus, *Ell.*) — Swamps, Florida to North Carolina. — Stem 2° - 3° high. Leaves 4′ - 6′ long, or the lowest 1° long.

34. **A. puniceus,** L. Stem hispid, panicled above; leaves lanceolate or oblong-lanceolate, acuminate, sharply serrate, very rough above, auriculate and clasping at the base; scales of the involucre linear-subulate, in about two rows; rays numerous and showy. — Swampy thickets in the upper districts. — Stem 3° - 5° high, commonly purplish. Rays violet-purple.

Var. **lævicaulis,** Gray. Stem smooth, green; branches pubescent; leaves wider and smoother. — Banks of the Coosa River, Rome, Georgia.

35. **A. prenanthoides,** Muhl. Stem pubescent in lines, corymbose at the summit; leaves ovate-lanceolate, acuminate, sharply serrate in the middle, contracted into a broadly winged petiole, which is dilated and clasping at the base, rough above; scales of the involucre narrow-linear, imbricated in 3 - 4 rows, with spreading green tips. — Damp woods, North Carolina, and northward. — Stem 1° - 3° high. Leaves thin, 5′ - 6′ long. Rays pale purple.

* 8. *Leaves lanceolate or oblong, entire, sessile or clasping: heads large, in corymbs or racemes: scales of the involucre numerous, with spreading green summits: rays numerous, showy.*

36. **A. grandiflorus,** L. Stem rigid, rough with bristly hairs, sparingly branched; leaves small, linear-oblong, sessile, hispid, commonly reflexed; heads very large, solitary, terminating the branches; scales of the involucre rigid; the outer ones with obtuse spreading tips, the inner erect, acute; rays violet. — Dry soil in the upper districts. — Stem 2° - 3° high. Leaves 1′ - 2′ long. Heads 1′ in diameter.

37. **A. oblongifolius,** Nutt. Stem hirsute, corymbosely branched, very leafy; leaves oblong-lanceolate, closely sessile, acute, scabrous above; heads terminating the short branchlets, single or corymbose; scales nearly equal, glandular; rays violet purple; achenia pubescent. — Rocky banks, Tennessee, and northward. — Stem 1° - 2° high. Leaves 1′ - 2′ long.

38. **A. Carolinianus,** Walt. Stem shrubby, long and trailing; the branches and leaves closely pubescent; leaves short, oblong, acute, abruptly

contracted into a short auriculate-clasping petiole; heads single, or somewhat racemose at the ends of the branches; scales of the involucre narrow-linear, with recurved subulate tips; rays slender, pale purple. — River swamps, Florida to South Carolina. — Stem 4° - 10° long. Leaves 1′ - 2′ long.

39. **A. Novæ-Angliæ,** L. Stem hairy or hispid, corymbose above; leaves lanceolate, acute, pubescent, scarcely narrowed at the auriculate-clasping base; heads corymbed; scales of the involucre linear-subulate, loosely imbricated, viscid; rays violet-purple. — Upper districts, in low ground. — Stem 2° - 4° high, mostly purple. Leaves 2′ - 3′ long. Heads ½′ or more in diameter, numerous and showy.

§ 5. ORTHOMERIS. — *Scales of the involucre regularly imbricated, scarious on the margins, without herbaceous tips: pappus simple, soft-hairy.*

40. **A. acuminatus,** Michx. Pubescent; stem erect, corymbose above; leaves large, oblong-lanceolate, acuminate, coarsely serrate, tapering at the base; heads corymbed, on slender naked peduncles; scales of the involucre linear-lanceolate; rays white. — Mountains of North Carolina, and northward. Sept. — Stem 1° - 1½° high. Leaves thin, 3′ - 5′ long, strongly veined.

41. **A. ptarmacoides,** Torr. & Gray. Smooth or scabrous; stems (6′ - 15′ high) simple; leaves linear-lanceolate, 1 - 3-nerved; heads small, in a flat corymb; scales of the involucre imbricated in 3 or 4 rows, short; rays white. — Northern States.

Var. **Georgianus,** Gray. Taller (1½° - 2° high), and more slender, corymbosely branched above; lower leaves lanceolate, sparingly serrate; corymb larger and more loosely flowered; ray flowers sterile, the style short or abortive. — Mountains of Georgia. Sept.

§ 6. OXYTRIPOLIUM. — *Scales of the involucre without herbaceous tips, scarious on the margins: pappus simple, soft-hairy: stems smooth and slender: leaves narrow, entire.*

* *Perennial: scales of the involucre imbricated in several rows: rays conspicuous.*

42. **A. Chapmani,** Torr. & Gray. Stem erect, straight, branched above; lower leaves long (3′ - 9′), linear, spreading, the upper scattered, subulate, erect; heads large, terminating the slender branches; scales of the involucre lanceolate, rigid; rays showy, purple; achenia smooth, many-ribbed. (A. exilis, *Ell.?*) — Pine-barren swamps, West Florida. Oct. — Stem 2° - 3° high.

43. **A. tenuifolius,** L. Stem mostly reclining, flexuous, sparingly branched; leaves fleshy, narrow-linear; heads few, scattered terminal, small; scales of the involucre narrow-linear, very acute, the lower ones smaller and passing into bracts; achenia slightly hairy, 5-ribbed. — Salt marshes, common. Oct. — Stem 1° - 3° long. Rays white or pale purple.

* * *Annual: scales of the involucre in 2 - 3 rows: rays short.*

44. **A. subulatus,** Michx. Stem paniculately much branched; leaves linear-lanceolate, tapering at each end; those of the branches linear or filiform, sessile; heads small, very numerous, in leafy racemes; scales of the cylindrical involucre linear-subulate, smooth; rays in two rows, not longer than the disk; achenia somewhat hairy, 5-ribbed. — Wet places along the

coast, Florida, and northward. Oct. — Stem 2° – 3° high. Lowest leaves sharply serrate.

45. **A. exilis,** Ell.? Stem diffusely branched; leaves linear-subulate; the lowest ones linear, tapering at the base; heads small, loosely panicled, on spreading peduncles; scales of the involucre linear-subulate, smooth; rays in a single row, longer than the disk; achenia 4-ribbed, hairy. — Marshes along the coast, Florida to South Carolina. Sept. — Stem 1° – 3° high. Lowest leaves oval or lanceolate, toothed; those of the branches short and bract-like. Rays blue.

§ 7. DŒLLINGERIA & IANTHE. *Pappus double, the outer row short and bristly, the inner long and capillary: scales of the involucre without herbaceous tips.*

* *Involucre as long as the disk: rays purple.*

46. **A. linariifolius,** L. Stem rigid, simple, closely pubescent; leaves numerous, linear, spreading, the margins very rough; heads solitary or somewhat racemose; scales of the involucre imbricated in several rows, linear, appressed; achenia silky. — Dry open woods. Sept. — Stem 1° high. Leaves 1′ long.

* * *Involucre shorter than the disk: rays white.*

47. **A. infirmus,** Michx. Stem pubescent; leaves elliptical, tapering at each end, hairy on the margins and veins beneath; heads few, on slender spreading peduncles; achenia smooth. — Upper districts of Carolina, and northward. August. — Stem 1° – 2° high. Leaves 2′ – 4′ long.

48. **A. amygdalinus,** Torr. & Gray. Stem roughish and corymbose above; leaves oval or oblong, acute at each end, nearly smooth; heads numerous, corymbed; scales of the involucre obtuse; achenia smooth. — Swamps. Sept. — Stem 2° – 4° high; the branches spreading. Leaves 1½′ – 2′ long.

49. **A. umbellatus,** Mill. Stem smooth, corymbose above; leaves lanceolate, acuminate; scales of the involucre acutish; achenia smooth. — Swamps in the upper districts. Sept. — Stem 3° – 6° high. Branches erect. Leaves 3′ – 5′ long.

50. **A. reticulatus,** Pursh. Closely pubescent; stem simple, scaly at the base; leaves oblong, sessile, strongly veined; heads large, corymbed, on long and naked (whitish) peduncles; scales of the involucre acute; achenia hairy. — Low pine barrens, Florida to South Carolina. May – July. — Stem 1° – 2° high. Leaves 1′ – 2′ long.

17. ERIGERON, L. FLEABANE.

Heads mostly hemispherical, many-flowered. Rays very numerous, pistillate. Scales of the involucre nearly equal, in 1 – 2 rows. Receptacle flat, naked. Achenia compressed. Pappus a single row of capillary bristles; or with an outer row of short chaffy scales or bristles. — Herbs. Leaves alternate. Rays white or purplish.

* *Rays longer than the disk.*

+ *Very numerous, filiform.*

1. **E. strigosus,** Muhl. Annual, rough-pubescent; stem corymbose-panicled above; leaves entire or sparingly serrate, the lowest oblong, tapering

into a slender petiole, the upper lanceolate or linear, sessile, distant; heads small, corymbose-panicled; rays white; outer pappus short and chaffy. — Dry old fields, common. June. — Stem 2° high.

Var. **Beyrichii,** Gray. Biennial, puberulent; stems slender, 1° - 2° high; leaves mostly entire, the lowest clustered, linear-spatulate, long-petioled, the upper sessile; heads small; rays rose-color. — Sandy pine barrens, South Carolina, and westward. May.

2. **E. annuus,** Pers. Annual, hirsute, erect (2° - 4° high); lowest leaves oblong, petioled, toothed, the upper lanceolate, sessile, mostly entire; heads corymbose; rays white, not twice the length of the sparsely hirsute involucre; inner pappus of the ray flowers scanty or none. — Waste places. May - June.

3. **E. Philadelphicus,** L. Hairy; stem corymbose-branched above; leaves thin, toothed or entire; the lowest spatulate-oblong; the upper oblong-lanceolate, clasping; rays very numerous and narrow, purplish. — Low ground. May. — Stem 2° - 4° high.

4. **E. quercifolius,** Lam. Resembles the preceding, but less hairy; lower leaves mostly sinuate-pinnatifid; heads smaller, and rays shorter. — Low ground, South Carolina, and westward.

+ + *Rays less numerous, linear.*

5. **E. bellidifolius,** Muhl. Hairy or villous; stem simple; lowest leaves spatulate or obovate, toothed above the middle; the upper oblong, sessile and entire; heads large, solitary or corymbose; rays broadly linear, bluish purple. — Open woods and banks in the upper districts. March - April. — Stem 1° high, stoloniferous.

6. **E. nudiculis,** Michx. Smooth or nearly so; stem simple, scape-like; radical leaves clustered, thick, spatulate or obovate, entire or slightly toothed; the others small and remote; heads corymbed; rays (about 30) white. — Pine-barren swamps. March - April. — Rhizoma thick. Stem 1° - 2° high.

* *Annual: rays shorter than the disk.*

7. **E. Canadensis,** L. Hirsute or smoothish; stem much branched; leaves linear-lanceolate; heads very numerous, in panicled racemes, small, cylindrical; rays white; disk flowers 4-toothed. — Old fields, common. May - Sept. — Stem 1° - 3° high.

8. **E. divaricatus,** Michx. Annual, decumbent, hirsute; leaves narrow-linear; heads loosely corymbose; rays purple, not longer than the simple pappus; achenium nearly smooth. — Mississippi, Tennessee, and northward

9. **E. linifolius,** Willd. Stem erect, 1° - 4° high, simple or branched; lowest leaves oblong, coarsely toothed, the upper linear, entire; heads panicled; flowers 5-toothed. — Waste places. Introduced.

18. BOLTONIA, L'Her.

Heads many-flowered. Rays pistillate. Scales of the hemispherical involucre imbricated in two rows, not longer than the disk. Receptacle hemispherical or conical, obscurely alveolate. Achenia flattened, obovate, wing-margined. Pappus composed of several short chaffy scales; that of the disk flowers mostly with 2 – 4 longer awns. — Perennial herbs, resembling Asters.

1. **B. diffusa,** Ell. Stem with long and slender branches; leaves linear, entire; heads small, terminal; achenia narrowly margined, hairy; pappus very short, two-awned. — Damp soil. Sept. – Oct. — Stem 3° – 4° high. Rays purplish.

2. **B. glastifolia,** L'Her. Stem paniculate; leaves rigid, lanceolate, sparingly serrate; the upper ones linear, entire; heads rather large; achenia broadly margined; pappus of few short bristles, and 2 – 4 long awns. — River swamps, Florida, and northward. July – Sept. — Stem 3° – 5° high. Rays white.

3. **B. asteroides,** L'Her. Stem paniculate, the branches short; leaves lanceolate, entire; achenia smooth, narrow-margined; pappus very short, without awns. — Swamps, North Carolina. — Stem 2° – 3° high. Heads intermediate in size between the two preceding.

19. BELLIS, Tourn. DAISY.

Heads many-flowered. Rays pistillate, in a single row. Scales of the involucre mostly in two rows, rather thin, equal. Receptacle conical, naked. Achenia obovate, compressed, wingless. Pappus none. — Low herbs, with alternate leaves, and solitary terminal heads of white or purple flowers.

1. **B. integrifolia,** Michx. Annual, branching, smooth (6′ – 12′ high); leaves obovate, entire, the upper ones lanceolate, sessile; heads peduncled; rays pale purple; achenia rough. — Tennessee (*Gattinger*). March.

20. SOLIDAGO, L. GOLDEN-ROD.

Heads few- or many-flowered. Rays 1 – 16, rarely wanting, pistillate. Disk flowers tubular, perfect. Scales of the involucre imbricated, rarely with spreading tips. Receptacle flat, mostly alveolate. Achenia terete, many-ribbed. Pappus simple, of numerous scabrous mostly capillary bristles — Perennial (rarely shrubby) erect plants, with alternate leaves, and small heads of yellow flowers.

§ 1. CHRYSASTRUM. — *Scales of the involucre with herbaceous spreading tips: bristles of the pappus unequal, some of them thickened upward: racemes short, forming a long and narrow leafy panicle.*

1. **S. discoidea,** Torr. & Gray. Pubescent or hairy; stem simple or branched; leaves ovate, acute, abruptly narrowed into a petiole, the lower ones coarsely serrate; racemes composed of 3 – 6 large 10 – 15-flowered heads; rays none; achenia smooth. (Aster ? discoideus, *Ell.*) — Rich woods, Florida, Georgia, and westward. Sept. — Flowers yellowish white. Stem 3° – 5° high.

2. **S. squarrosa,** Muhl. Stem stout, simple, pubescent above; leaves large, smoothish, oblong, acute, serrate, the lower ones tapering into a long winged petiole; the upper sessile and entire; racemes shorter than the leaves, composed of 3 – 6 clustered heads; rays 12 – 16, showy; achenia smooth. — Mountains of Georgia, and northward. Sept. — Stem 2° – 4° high. Lowest leaves 6′ – 8′ long. Heads 16 – 24-flowered.

§ 2. VIRGAUREA. — *Scales of the involucre appressed: rays mostly fewer than the disk flowers, rarely wanting: racemes racemose, corymbose, or panicled.*

* *Racemes not 1-sided: leaves feather-veined.*

+ *Racemes axillary, cluster-like, usually shorter than the leaves: the uppermost often crowded and racemose: leaves uniform, serrate.*

3. **S. pubens,** M. A. Curtis. Stem simple, slender, pubescent; leaves thin, oval-lanceolate, acuminate at each end, coarsely serrate, pubescent; racemes dense, the upper ones racemose; heads 8 – 14-flowered; rays 4 – 7; scales of the involucre obtuse, villous pubescent; achenia hoary. — Upper and mountainous parts of Georgia and North Carolina. August. — Stem 2° – 3° high. Leaves 3′ – 5′ long.

4. **S. Buckleyi,** Torr. & Gray. Villous-pubescent; leaves oblong, acute at each end, coarsely serrate, smoother above; racemes loose, all separate and much shorter than the leaves; heads 15 – 20 flowered; rays 4 – 6; scales of the involucre rather acute, nearly smooth; achenia short and smooth. — Interior of Alabama to North Carolina. Oct. — Stem 2° high. Leaves 3′ long.

5. **S. latifolia,** L. Stem smooth, simple; leaves oval or ovate, acuminate, unequally toothed-serrate, mostly pubescent beneath; racemes roundish or oblong, commonly shorter than the leaves, the upper more or less racemose; heads about 10-flowered; rays 3 – 4; scales of the involucre smoothish, obtuse; achenia silky-pubescent. — Shady woods in the upper districts. Sept. — Stem 1° – 2° high. Leaves 3′ – 5′ long, 2′ – 3′ wide.

6. **S. cæsia,** L. Stem slender, often branching, smooth and glaucous; leaves smooth, lanceolate, acuminate, sessile, sharply serrate; racemes all distinct, roundish, much shorter than the leaves; the lowest rarely elongated; heads about 10-flowered; rays 3 – 4, large, bright yellow; scales of the involucre smooth, obtuse; achenia pubescent. — Damp shady woods and banks. Sept. — Stem 2° – 3° high, often purple. Leaves 3′ – 5′ long, ½′ – 1′ wide. Racemes in all the upper axils.

7. **S. Curtisii,** Torr. & Gray. Smoothish; stem tall, not glaucous, straight and mostly simple, striate angled; leaves lanceolate or obovate-lanceolate, acuminate at each end, sharply serrate above the middle, sessile; racemes dense, much shorter than the leaves; heads 8 – 12-flowered; rays 4 – 6; scales of the involucre oblong-linear, obtuse; achenia hoary-pubescent. — Mountains of North Carolina and Tennessee. Sept. — Stem 2° – 3° high. Leaves 5′ – 6′ long.

8. **S. monticola,** Torr. & Gray. Smoothish; stem terete, simple and slender, puberulent above; leaves very thin, oblong-lanceolate, acuminate, slightly serrate; the upper ones small and bract-like; racemes sessile, the uppermost approximate and nearly as long as the leaves; heads about 15-flowered; scales of the involucre linear, acute; achenia smooth. — Mountains of North Carolina. Sept. — Leaves and flowers smaller than the last.

9. **S. lancifolia,** Torr. & Gray. Smooth; stem tall, simple, angled; leaves long-lanceolate, acuminate, finely serrate, sessile; racemes approximate, peduncled, somewhat compound; the upper ones longer than the reduced leaves; heads nearly sessile; scales of the involucre oblong, very

obtuse, minutely granular; achenia hairy. — Mountains of North Carolina. Sept. — Stem 3° high. Leaves 4′ – 5′ long. Heads large.

+ + *Racemes crowded in racemose or pyramidal terminal panicles, longer than the leaves* (*except No.* 15): *lowest leaves large, commonly tapering into a petiole, the uppermost small, sessile and entire.*

10. **S. bicolor,** L. Pubescent; stem simple, or branching above; lowest leaves spatulate-oblong, serrate; the upper lanceolate; panicle racemose, the lowest racemes shorter than the leaves; heads about 20-flowered; rays 7 – 9, short, whitish; scales of the involucre obtuse. — Dry soil in the upper districts, and northward. Sept. — Stem 1° – 2° high. Radical leaves 2′ – 5′ long.

Var. **concolor,** Torr. & Gray. Mostly taller (2° – 4°), and branching, hirsute; leaves broader; rays yellow. — Mountains of Georgia and Tennessee.

11. **S. puberula,** Nutt. Minutely pubescent; stem simple, virgate; lowest leaves spatulate-oblong, serrate above the middle; the upper lanceolate; panicle dense, racemose or pyramidal; heads about 30-flowered; rays about 10; scales of the involucre subulate; achenia smoothish. (S. pubescens, *Ell.*) — Dry sandy soil, in the upper districts. Sept.

Var. **pulverulenta,** Chapm. Upper leaves shorter, oblong-obovate; scales of the (20 – 25-flowered) involucre linear-lanceolate; achenia smooth. (S. pulverulenta, *Nutt.*) — Damp pine barrens, Florida to North Carolina. Sept. – Oct. — Stem 2° – 4° high, often purplish. Lowest leaves 2′ – 4′ long. Flowers middle-sized, bright yellow.

12. **S. petiolaris,** Ait. Minutely pubescent; stem mostly simple, straight, very leafy; leaves oblong-lanceolate or elliptical, acute, rough on the margins, all but the lowest entire, and nearly sessile; panicle racemose or oblong; heads large, 20 – 25-flowered; rays about 10, showy; scales of the involucre linear, pubescent; the outer ones more or less spreading; achenia smoothish. — Dry sandy soil, Florida to North Carolina. Sept. — Stem 2° – 3° high. Leaves 1′ – 2′ long.

13. **S. speciosa,** Nutt. Stem stout, mostly simple, smooth below, pubescent above; leaves smooth, the lowest large (5′ – 8′ long, 1½′ – 2′ wide), serrate; the upper ones lanceolate; panicle compact, pyramidal; heads rather large, crowded, 15 – 20-flowered; rays 6 – 8, showy; scales of the involucre lanceolate, obtuse; achenia smooth. — Varies, with the stem and lower surface of the broader (2′ – 3′) leaves villous; the fewer, larger, and more scattered heads about 30-flowered; or every way smaller; the short racemes forming a narrow racemose panicle. — Dry soil; the first variety in the upper districts. Sept. – Oct. — Stem 3° – 5° high, often purplish.

14. **S. verna,** Curtis. Closely pubescent and somewhat hoary; stem simple or panicled above; leaves thin, roughish, the lowest oblong, abruptly narrowed into a long and slender petiole, the upper ones sessile and entire; racemes very slender, spreading, forming an open somewhat corymbose panicle; heads rather large, scattered, about 30-flowered; rays narrow; scales of the involucre linear; achenia pubescent. — Pine barrens, near Wilmington, North Carolina (*Curtis*). May – June. — Stem 2° – 3° high. Lowest leaves 3′ – 5′ long.

15. **S. glomerata,** Michx. Smooth; stem stout, simple; leaves large, oblong-lanceolate, acuminate at each end, sharply serrate, the lowest tapering into a petiole; racemes cluster-like, much shorter than the leaves; the upper ones approximate and racemose; heads very large, 30 – 40-flowered; rays 10 – 12; scales of the involucre acute, smooth; achenia pubescent. — High mountains of North Carolina. Sept. — Stem 1° – 2° high. Leaves 4′ – 9′ long.

+ + + *Racemes corymbose: heads very large.*

16. **S. rigida,** L. Rough-pubescent and somewhat hoary; stem stout; leaves rigid, oval or oblong, serrate, sessile; the lowest narrowed into a petiole; corymb compact; heads 30 – 35-flowered; rays 7 – 10; scales of the involucre oblong, obtuse; achenia smooth. — Mountains of Georgia, and northward. Sept. — Stem 3° – 4° high. Lowest leaves 6′ – 9′ long.

17. **S. corymbosa,** Ell. Stem erect, smooth; the branches rough-hairy; lower leaves oblong-lanceolate, the upper ovate; all fleshy, rigid, smooth, but very rough and fringed along the margin; racemes corymbose, the lower recurved; rays long. — Upper districts of Georgia and Tennessee. Sept. – Oct. — Stem stout, 4° – 6° high. Lower leaves 4′ – 6′ long. Heads about 30-flowered. Scales of the involucre oval. Rays about 10.

18. **S. spithamæa,** M. A. Curtis. Stem low (8′ – 12′), rigid, soft-hairy; leaves oblong-lanceolate, smooth, sharply serrate, acute; the lowest tapering into a petiole; corymb dense, compound; heads 25 – 30-flowered, rays 6 – 7, short; scales of the involucre lanceolate, acute; achenia pubescent. — Mountains of North Carolina. Sept. — Stems tufted. Leaves 1′ – 3′ long.

* * *Racemes 1-sided, mostly compound, spreading or recurved (in Nos. 20 and 21 often erect), commonly disposed in a pyramidal panicle.*

1 + *Smooth species, growing in marshes: stems virgate: leaves very numerous, more or less fleshy; the lowest elongated and tapering into a margined petiole; the upper small and passing into bracts: heads middle-sized: achenia pubescent.*

19. **S. flavovirens,** Chapm. Smooth throughout; stem stout, simple; leaves oblong, obtuse or mucronate; the lowest serrate, on winged petioles, the upper entire, narrowed at the base; panicle pyramidal; heads 10 – 12-flowered; rays mostly 3, showy; scales of the involucre lanceolate, acutish. — Marshes, Apalachicola, Florida. Sept. — Whole plant yellowish green. Stem 2° – 6° high. Lowest leaves 5′ – 10′ long, obscurely ribbed. Heads rather large.

20. **S. stricta,** Ait. Smooth; stem slender, rarely branched; leaves somewhat fleshy, entire; the lowest oblong-spatulate, sometimes slightly serrate, veiny; the upper very small, lanceolate, appressed; panicle racemose, erect, or pyramidal, with the lower racemes 1-sided; heads 12 – 16-flowered; rays 5 – 7; scales of the involucre lanceolate, acute. — Pine barren swamps. Sept. — Stem 3° – 5° high.

21. **S. angustifolia,** Ell. Smooth; stem slender, simple, or branched above; leaves fleshy, entire, the lowest lanceolate, the upper linear and acute; panicle racemose or pyramidal, lower racemes spreading and 1-sided; heads

rather small, about 10-flowered; rays 5, narrow; scales of the involucre linear, obtuse. — Coast of Florida to North Carolina. Oct. — Stem 2° - 4° high.

22. **S. sempervirens,** L. Stem simple, or branched above; lowest leaves lanceolate-oblong, entire, fleshy, long-petioled; the upper lanceolate, acute, sessile or partly clasping; panicle contracted or pyramidal; heads rather large; rays 7 - 10; scales of the involucre linear, acutish. — Salt marshes, Florida, and northward. Sept. - Oct. — Stem 3° - 8° high. Leaves varying in thickness, the lowest 6′ - 12′ long.

2 ⊷ *Stems (smooth) commonly branching: leaves not fleshy, serrate, veiny; the lowest ample, tapering into a margined petiole: panicles pyramidal, or racemose on the spreading branches.*

23. **S. patula,** Muhl. Stem stout, strongly angled; leaves large, ovate or oblong, acute, very rough above, smooth beneath; panicles dense, leafy; peduncles pubescent; rays 6 - 7; achenia sparsely pubescent. — Swamps, Georgia, and northward. — Leaves 6′ - 12′ long.

Var. **strictula,** Torr. & Gray. Stem simple, or with few elongated rough-pubescent branches; leaves smaller; racemes short, forming a long and slender compound raceme. — Swamps, Florida, and northward. Sept. - Oct. — Stem 4° - 6° high.

24. **S. juncea,** Ait. Smooth; leaves sharply serrate, acute or acuminate at each end, the lowest elliptical or lanceolate-oblong, somewhat 3-ribbed, on winged and ciliate petioles; the upper sessile; panicle dense, somewhat corymbose; heads small, crowded, 18 - 20-flowered; rays 8 - 12, small; scales of the involucre obtuse; achenia nearly smooth. — Rich soil in the upper districts. Sept. — Stem 2° - 4° high.

25. **S. arguta,** Ait., var. **Caroliniana,** Gray. Inflorescence pubescent, otherwise glabrous; stem 2° - 4° high, branching above; lowest leaves large (4′ - 6′ long), ovate, sharply serrate, wing-petioled, upper ones lanceolate, entire; heads 3″ long, crowded in short terminal recurved racemes, about 20-flowered; achenia pubescent. — Mountains of Georgia and North Carolina. August.

26. **S. Boottii,** Hook. Stem smooth, or pubescent above; leaves lanceolate or oblong, acute or acuminate at each end, appressed-serrate, smooth or more or less pubescent; panicle open, oblong or pyramidal; heads about 12-flowered; rays 5; scales of the involucre obtuse; achenia nearly smooth. — Varies, with longer, narrower, and more sharply serrate leaves, and slender racemose panicles towards the summits of the spreading branches. — Sandy soil, Florida to North Carolina. Sept. — Stem 2° - 3° high, often purplish.

27. **S. brachyphylla,** Chapm. Stem slender, pubescent, sparingly branched; leaves smooth or pubescent on the veins, finely serrate, the lowest spatulate, the upper oval or orbicular; racemes short, forming a compound raceme toward the end of the spreading branches; scales of the 3 - 5-flowered involucre rigid, obtuse; rays none; achenia pubescent, as long as the rigid pappus. — Dry light soil, Georgia, Florida and westward. Sept. — Stem 2° - 3° high. Leaves 1′ - 2′ long.

3 +– *Leaves very numerous, gradually diminishing in size upward, veiny, sessile, or the lowest narrowed into a short petiole: heads small.*

28. **S. rugosa,** Mill. Stem hirsute; leaves ovate or oblong, acute, serrate, rough above, pubescent, especially on the veins beneath, often rugose, prominently veined; panicle leafy, often narrow and elongated; the racemes slender and recurved; scales of the 10 – 15-flowered involucre linear; rays 6 – 9, small; achenia pubescent. — Low thickets, Florida, and northward. Sept. – Oct. — Stem 2° – 6° high, commonly branching. Leaves variable in texture and pubescence.

29. **S. ulmifolia,** Muhl. Stem smooth, or softly pubescent above; leaves ovate-lanceolate, acuminate, serrate, smooth on the upper surface, paler and pubescent on the veins beneath; panicle loose, spreading; heads about 10-flowered; rays 4 – 5; scales of the involucre acutish; achenia nearly smooth. — Low ground in the upper districts. Sept. — Stem 2° – 3° high. Leaves thin, 2′ – 3′ long.

30. **S. Elliottii,** Torr. & Gray. Smooth; stem mostly simple; leaves oblong-lanceolate or elliptical, sessile, acute, finely serrate, the upper often entire; racemes crowded, forming a pyramidal panicle; scales of the 13 – 20-flowered involucre linear, obtuse; rays 5 – 7; achenia minutely pubescent. (S. elliptica? *Ell.*) — Damp soil near the coast, Georgia to North Carolina. Sept. — Stem 3° – 6° high. Leaves very numerous, 2′ – 3′ long.

31. **S. pilosa,** Walt. Stem hirsute, simple, or branching above; leaves very numerous, oblong-lanceolate, slightly serrate, mucronate, rough above, pubescent on the veins beneath; racemes numerous, slender, forming a pyramidal or somewhat corymbose panicle; heads narrow, 12 – 15-flowered; rays 7 – 10, small; scales of the involucre linear; achenia slightly pubescent. — Low ground, Florida, and northward. Sept. – Oct. — Stem 2° – 8° high. Leaves 2′ – 3′ long.

32. **S. odora,** Ait. Stem mostly simple, pubescent in lines; leaves entire, linear lanceolate, smooth on both surfaces, rough on the margins, punctate with pellucid dots, often reflexed; panicle pyramidal, mostly one-sided; heads 5 – 7-flowered; rays about 3, showy; achenia hairy. — Dry soil, Florida, and northward. Oct. — Stem 2° – 3° high. Leaves 1′ – 2′ long. — Plant anise-scented.

33. **S. Chapmani,** Gray. Stem 2° – 3° high, mostly simple; leaves short (1′ – 1½′ long), oblong-ovate, obtuse or mucronate-acute, the margins scabrous; heads 5 – 9-flowered; rays 1 – 3, or none. (S. odora, in part, 1st edit.) — Sandy pine barrens, Florida. Sept.

34. **S. tortifolia,** Ell. Stem straight, simple or branched, rough-pubescent above; leaves small, linear, entire, or the lowest slightly serrate, often twisted, pubescent on the margins and midrib; panicle dense, pyramidal; heads small, 6 – 9-flowered; rays 3 – 4; scales of the involucre linear, obtuse; achenia slightly pubescent. — Dry sandy soil, Florida to North Carolina. Sept. — Stem 2° – 3° high. Leaves very numerous, 1′ – 2′ long.

35. **S. gracillima,** Torr. & Gray. Smooth; stem slender; lowest leaves spatulate-lanceolate, obtuse, serrate near the apex; the others linear and

entire; heads rather large, 9-12-flowered, forming a narrow compound raceme at the summit of the stem and branches; rays mostly wanting; scales of the involucre oblong, obtuse; achenia pubescent. — Dry pine barrens, Middle Florida. Oct. — Stem 2° high.

4 ⊹ *Lowest leaves cordate, on long petioles: heads in simple or compound racemes, 8-10-flowered: pappus rigid, equalling or shorter than the hairy achenia.*

36. **S. amplexicaulis**, Torr. & Gray. Pubescent and roughish; stem slender, sparingly branched above; leaves sharply serrate, acute, the lowest broadly cordate; those of the stem ovate, abruptly contracted into a broadly winged and clasping petiole, the uppermost small, sessile, and entire; racemes slender, often simple; rays 1-3; pappus as long as the achenium. — Dry open woods. Oct. — Stem 2°-3° high.

37. **S. cordata**, Short. Pubescent; stem sparingly branched above; leaves acute, on wingless petioles; the lowest large, coarsely serrate, cordate, the others ovate, sharply serrate, on short petioles; the uppermost entire, sessile; racemes compound, terminating the spreading branches, composed of crowded cluster-like racemes; the lower ones scattered; scales of the 8-10-flowered involucre rigid, obtuse; rays 5-6; pappus much shorter than the achenium. (Brachychæta, *Torr. & Gray.*) — Mountains of Georgia and North Carolina. Sept. — Stem 2°-3° high. Lowest leaves 3′-5′ wide.

5 ⊹ *Leaves nearly sessile, more or less plainly 3-ribbed: panicles recurved.*

38. **S. Missouriensis**, Nutt. Glabrous; stem simple, rigid, 1°-2° high; leaves rather rigid, lanceolate, sharply serrate above the middle, the lowest tapering into a petiole, the upper linear, entire; panicle short, dense; heads 16-20-flowered; rays 8-12; achenia slightly pubescent. — Dry soil, Tennessee, and westward. July.

39. **S. Gattingeri**, Chapm. Low (1° high), simple, glabrous; lower leaves lanceolate, rather obtuse, tapering into a petiole, entire, or obscurely denticulate near the apex, the uppermost (½′ or less long) passing into the oblong-linear obtuse bracts of the widely spreading flat panicle; heads ovoid; 16-20-flowered, the oblong scales obtuse; rays few, notched; pappus coarse, shorter than the flowers; ovary smooth. — Rocky barrens of Tennessee (*Gattinger*).

40. **S. nemoralis**, Ait. Plant grayish, minutely pubescent and roughened; stem mostly simple; leaves obscurely 3-ribbed; the lowest spatulate-oblong or lanceolate, serrate; the upper lanceolate, acute, narrowed toward the base, mostly entire; panicle dense, oblong or pyramidal, recurved; heads 10-12-flowered; rays 6-7; achenia hairy. — Old fields and open woods, common. — Stem 1°-2° high.

41. **S. Leavenworthii**, Torr. & Gray. Stem simple, minutely pubescent and roughish; leaves very numerous, smooth, linear-lanceolate, entire; the lowest sparingly serrate; panicle pyramidal; heads rather large; rays 10-12; achenia pubescent. — Damp soil, Florida to South Carolina. Oct. — Stem 2°-3° high. Leaves 2′-3′ long, 3″-4″ wide, faintly ribbed.

42. **S. Canadensis,** L. Stem pubescent and often rough; leaves lanceolate, acute or acuminate, sharply serrate, rough above, pubescent beneath; panicles pyramidal, dense; heads small; rays very short; achenia pubescent. — Varies (S. procera, *Ell.*), with a more hairy stem, less serrate leaves, the upper entire, and larger heads and rays. — Margins of fields, etc., Florida, and northward. Oct. — Stem 3° – 8° high.

43. **S. serotina,** Ait. Stem smooth, often purple; leaves lanceolate, acuminate, serrate, glabrous; panicle pyramidal, of numerous recurved racemes; rays short; mature achenia smooth. — Low ground, Florida, and northward. Oct. — Stem stout, 4° – 8° high. Heads larger than in the last.

Var. **gigantea**, Gray. Stem and leaves as in the type, but the latter more or less pubescent beneath, and scabrous above. — With the preceding.

44. **S. rupestris,** Raf. Inflorescence sparsely pubescent, otherwise glabrous; stem branching, 3° high; leaves thin, lanceolate, sharply serrate, 3′ – 4′ long, faintly ribbed; panicle leafy; heads 2″ long; rays small. — Rocky river banks, Tennessee. August.

§ 3. CHRYSOMA. — *Stem shrubby: leaves impressed-punctate, veinless: rays 1 – 3; receptacle conical, naked.*

45. **S. pauciflosculosa,** Michx. Stem, leaves, and involucre viscid; leaves spatulate-lanceolate or linear, obtuse, entire, the lowest scale-like; panicle 1-sided; the clusters erect, on naked peduncles; heads 4 – 7-flowered; scales of the involucre obtuse; achenia pubescent. — Sandy banks and shores, Florida to South Carolina. Oct. — Stem 1° – 2° high. Leaves 1′ – 2′ long. Rays large.

§ 4. EUTHAMIA. — *Herbaceous: leaves narrow, entire, 1 – 5-nerved: heads corymbose: rays more numerous than the disk flowers: receptacle bristly: involucre viscid.*

46. **S. lanceolata,** L. Stem pubescent above, corymbose; leaves linear-lanceolate, roughish on the upper surface, pubescent on the veins beneath, 3 – 5-nerved; heads obconical, mostly sessile, in dense clusters; rays 15 – 20. — Damp soil, Georgia, and northward. — Stem 2° – 3° high.

47. **S. tenuifolia,** Pursh. Nearly smooth; stem corymbosely much branched; leaves linear, 3-nerved, glandular-dotted; heads few in a cluster, often pedicelled, top-shaped; rays about 10. — Low sandy places, common. Oct. — Stem 2° high. Heads smaller than those of the preceding.

21. BIGELOVIA, DC.

Heads 3 – 4-flowered; the flowers all tubular and perfect. Involucre cylindrical-club-shaped, as long as the flowers; the scales linear, rigid, appressed, somewhat viscid. Receptacle narrow, cuspidate. Achenia terete, striate, hairy. Pappus simple, of numerous scabrous capillary bristles. Styles scarcely exserted. — Smooth erect perennial herbs, with narrow obtuse entire leaves, and small heads of yellow flowers, disposed in a compound corymb.

1. **B. nudata,** DC. Stem mostly simple, virgate; lowest leaves spatulate-lanceolate, obscurely 3-nerved; the others scattered, linear. — Var. VIR-

GATA. Lowest leaves linear-spatulate, 1-nerved; the others narrow-linear or filiform; heads larger. — Low pine barrens, Florida, and northward. Sept. — Stem 2° high.

22. APLOPAPPUS, Cass.

Heads many-flowered; the rays pistillate. Involucre hemispherical or bell shaped. Pappus single, of numerous capillary bristles, alike in the rays and disk. Receptacle alveolate. Achenia silky. — Annual or biennial herbs, with alternate leaves, and scattered heads of yellow flowers.

§ 1. *Heads large: involucre hemispherical: rays numerous: pappus brown.*

1. **A. rubiginosus,** Torr. & Gray, var. **phyllocephalus,** Gray. Stem 2°-3° high, corymbosely branched, the branches short, pubescent; leaves lanceolate, with bristle-pointed spreading teeth; heads, with involucre-like leaves at the base; achenia club-shaped; bristles of the pappus unequal. — Damp places, Punta Rassa, South Florida. Oct.

§ 2. *Heads small: involucre narrow-bell-shaped, with subulate scales: rays* 5-8*: pappus white.*

2. **A. divaricatus,** Gray. Hispid and glandular; stem erect, the slender branches spreading; leaves linear-lanceolate, sparingly toothed; involucre soft-hairy; rays 5-8. — Sandy fields and woods, Florida, Georgia, and westward. Sept. — Stem 1°-4° high. Panicle large. Heads 15-20-flowered.

23. HETEROTHECA, Cass.

Heads many-flowered. Rays pistillate. Scales of the involucre imbricated in few rows, linear. Receptacle alveolate, bristly. Achenia of the rays oval, destitute of pappus, those of the disk flowers obovate, compressed, hairy, with a double pappus; the outer one short and chaffy, the inner bristly. — Biennial rough-hairy branching herbs, with irregularly toothed or entire alternate leaves, and corymbose-panicled heads of yellow flowers.

1. **H. Lamarckii,** Cass. Leaves oblong, toothed, commonly sessile or clasping; the lowest petioled, obtuse or somewhat cordate at the base; involucre thick, shorter than the brownish inner pappus. — Dry sandy places along the coast, South Carolina, and westward. Sept. — Stem rigid, 1°-2° high. Leaves 1′-2′ long.

24. CHRYSOPSIS, Nutt.

Pappus of the ray and disk flowers alike, double; the exterior row chaffy, or of chaffy bristles, the interior longer, capillary; otherwise like Heterotheca. — Biennial or perennial hairy or silky herbs, with linear or oblong mostly entire leaves. Heads mostly corymbed. Flowers yellow.

* *Leaves narrow, nerved, entire: achenia oblong-linear, narrowed at each end, pubescent: perennials.*

1. **C. graminifolia,** Nutt. Stem leafy, white with appressed silky shining hairs, as also the linear leaves; heads numerous, rather small, on slender, more or less glandular peduncles; involucre top-shaped, the linear scales glan-

dular. — Sandy pine barrens, common. Sept. — Stem 1° – 2° high. Lowest leaves 4′ – 8′ long.

2. **C. oligantha,** Chapm. Stem nearly naked and glandular above, the lower part, like the linear or lanceolate leaves, silky with appressed shining hairs; heads 1 – 4, on long erect glandular peduncles, rather large; involucre bell-shaped, the scales glandular-pubescent. — Low pine barrens, Florida. April – May. — Stem 1° high. Stem-leaves clasping; those of the root elongated.

3. **C. pinifolia,** Ell. Smooth; stem rigid; leaves linear, crowded, rigid; corymb large; scales of the involucre woolly at the summit. — High sand-hills in the western districts of Georgia (*Elliott*). — Stem 1½° – 2° high. Stem leaves 4′ – 6′ long, the uppermost filiform. Heads large. Exterior pappus somewhat chaffy.

* * *Leaves veiny, oblong or lanceolate; the lowest narrowed at the base, the upper sessile: achenia obovate, compressed.*

4. **C. Mariana,** Nutt. Perennial; stem simple, covered with loose silky deciduous hairs; lowest leaves spatulate-oblong, entire or slightly serrate; the upper ones lanceolate, sessile, entire; corymb small, mostly simple and umbellate, cone-like in the bud; peduncles and involucre glandular. — Sandy pine barrens, Florida, and northward. Sept. — Stem 1° – 2° high.

5. **C. trichophylla,** Nutt. Biennial; stem very leafy, mostly branching, villous with loose silky hairs; leaves oblong or lanceolate, the earliest ones crowded, obtuse and densely villous, the upper mostly acute and often smoothish; corymb large, compound; peduncles and involucre smoothish. — Var. HYSSOPIFOLIA (C. hyssopifolia, *Nutt.*) has narrow-linear and smooth leaves, except the tuft at the base. — Dry pine barrens, Florida to North Carolina. Sept. — Stem 2° – 3° high, commonly ascending. Leaves 1′ – 2′ long.

6. **C. gossypina,** Nutt. Biennial, densely villous and hoary throughout; leaves oblong, obtuse, entire; the lowest spatulate, the upper sessile; corymb simple. (C. dentata, *Ell.*, leaves larger, the lowest sinuate-toothed. C. decumbens, *Flora*, inflorescence glandular.) — Dry sandy soil, Florida, and northward. Sept. — Stem 1° – 2° high.

7. **C. scabrella,** Torr. & Gray. Biennial, glandular-scabrous throughout; the earliest leaves only villous; lowest leaves clustered, spatulate, entire, the others broadly or narrowly lanceolate, 1′ – 2′ long; corymb compound; involucral scales linear, acute, rigid; pappus fulvous; achenia silky. — Dry sandy soil near the coast, Florida. Oct.

8. **C. villosa,** Nutt. Rough-hairy and somewhat hoary throughout; stem rigid, very leafy; leaves lanceolate, acute, entire or sparingly serrate; the upper ones sessile, the lowest narrowed into a petiole; heads large, in a simple corymb. — Dry soil, Alabama, and westward. Sept. — Stem 1° – 2° high. Leaves 1′ long, fringed near the base.

25. GRINDELIA, Willd.

Heads many-flowered. Rays pistillate. Scales of the hemispherical involucre imbricated in several rows. Receptacle flat. Achenia oval or obovate, glabrous. Pappus of 2 – 8 rigid deciduous awns or bristles. — Perennial herbs, with alternate leaves, and single heads of yellow flowers terminating the branches.

1. **G. lanceolata,** Nutt. Glabrous, corymbosely branching (1° – 2° high); leaves lanceolate, sessile, sharply serrate; involucre glutinous, the scales nearly equal, ending in a filiform point; bristles of the pappus mostly 2. — Tennessee, Alabama, and westward.

26. AMPHIACHYRIS, Nutt.

Heads small, radiate. Rays pistillate, fertile. Disk flowers perfect but sterile. Scales of the top-shaped involucre few and rigid. Pappus of the disk flowers of 5 – 8 bristle-like scales; of the rays minute or obsolete. — A low much branched glabrous annual, with linear alternate leaves and yellow pedicellate flowers.

1. **A. dracunculoides,** Nutt. — Colbert County, Alabama (*Mohr*), and westward. August.

27. BACCHARIS, L.

Heads diœcious, many-flowered; the flowers all tubular. Corolla of the sterile flowers 5-cleft; of the fertile filiform, nearly entire; style exserted. Scales of the oblong or hemispherical involucre imbricated in several rows. Receptacle naked or somewhat chaffy. Achenia ribbed. Pappus of the sterile flowers capillary, in a single row, as long as the involucre; of the fertile flowers in 1 – several rows, commonly much longer than the involucre. — Smooth and resinous shrubs. Leaves alternate. Flowers white.

1. **B. halimifolia,** L. Leaves obovate, or oblong-obovate, toothed above the middle, the uppermost lanceolate, entire; heads peduncled, the terminal ones clustered; pappus of the fertile flowers 3 – 4 times as long as the involucre. — Low ground near the coast. Sept. – Oct. — Shrub 2° – 12° high.

2. **B. glomeruliflora,** Pers. Leaves wedge-obovate, coarsely toothed, rigid; the uppermost obovate, entire; heads very numerous, in dense sessile axillary clusters; pappus of the fertile flowers twice as long as the involucre. — Swamps along the coast, Florida to North Carolina. Nov. — Shrub 6° – 12° high.

3. **B. angustifolia,** Michx. Leaves linear, entire; heads single, or 2 – 4 in a terminal cluster; achenia smooth. — Saline marshes, Florida to North Carolina. Oct. — Shrub 4° – 8° high. Heads small.

28. INULA, L. ELECAMPANE.

Heads many-flowered. Rays pistillate. Scales of the involucre imbricated in several rows. Receptacle flat or convex, naked. Anthers bicaudate at the base. Pappus single, of capillary slightly scabrous bristles. — Perennial herbs. Flowers yellow.

1. **I. Helenium,** L. Stem stout; leaves large, ovate, denticulate, tomentose beneath; the lowest ones petioled, the upper clasping; heads very

large, somewhat corymbose; outer scales of the involucre broadly ovate, leafy; rays numerous, narrow; achenia 4-sided, smooth. — Mountains of North Carolina. Introduced.

29. PLUCHEA, Cass.

Heads many-flowered, discoid; the central flowers mostly perfect, but sterile, with the corolla dilated and 5-cleft; the others pistillate, slender, slightly toothed. Anthers bicaudate. Scales of the involucre imbricated. Receptacle flat, mostly naked. Achenia grooved or angled. Pappus a single row of capillary slightly scabrous bristles. — Odorous mostly pubescent and glandular herbs, with alternate ovate or oblong serrate leaves. Heads of purplish flowers corymbose.

1. **P. bifrons,** DC. Stem simple, or sparingly branched; leaves oblong, acute, denticulate, strongly reticulated and rugose, cordate and clasping; heads clustered; involucre pubescent and viscid. — Margins of pine barren ponds, Florida to North Carolina. Sept. — Stem 1° - 2° high. Flowers pale purple or white.

2. **P. fœtida,** DC. Minutely pubescent and glandular; leaves large, membranaceous, ovate-lanceolate, acuminate, serrate, tapering into a petiole; corymbs axillary and terminal; heads rather small, numerous, on slender pedicels; involucre smoothish; often purplish. — Damp soil, Florida, and northward. Sept. — Stem 2° - 5° high. Leaves 5′ - 8′ long, resinous-dotted. Flowers purple.

3. **P. camphorata,** DC. Minutely pubescent and glandular-viscid; leaves ovate-lanceolate or oblong-ovate, acute, denticulate, nearly sessile; heads rather large, in a dense corymb, on short and stout pedicels; scales of the involucre pubescent, the inner ones long-acuminate. — Salt marshes, Florida to North Carolina. Sept. — Stem 1° - 2° high; the branches few and erect. Leaves 2′ - 3′ long. Flowers light purple.

4. **P. purpurascens,** DC. Tomentose and glandular; leaves ovate-lanceolate, acute or acuminate, sharply and somewhat erosely serrate, on slender petioles; heads rather small, on slender pedicels, loosely corymbose; scales of the involucre pubescent, the inner ones lanceolate, acute. — Swamps and low ground, Florida. Sept. — Stem 1° - 2° high, with numerous spreading branches. Leaves 2′ - 4′ long. Flowers bluish purple.

30. PTEROCAULON, Ell.

Heads and flowers chiefly as in Pluchea. Scales of the involucre lanceolate, imbricated in several rows, caducous. Receptacle minutely hairy. Achenia angled, pubescent. Pappus of numerous equal capillary bristles, longer than the involucre. — Perennial herbs. Leaves lanceolate, densely tomentose and hoary beneath, the margins broadly decurrent on the stem. Heads compactly spiked.

1. **P. pycnostachyum,** Ell. Stem rarely branched, 1° - 2° high, leaves wavy, smooth above; spike thick, woolly; flowers white. — Damp pine barrens, Florida to North Carolina. June - July.

31. ANTENNARIA, Gært. EVERLASTING.

Heads many-flowered, diœcious, discoid; the corolla of the sterile flowers 5-cleft; of the pistillate filiform. Scales of the involucre scarious, colored. Receptacle convex or flat. Achenia nearly terete. Pappus a single row of capillary bristles, which, in the staminate flowers, are thickened at the apex. — Perennial downy or woolly herbs, with alternate entire leaves, and corymbose rarely single heads.

1. **A. margaritacea,** R. Br. Stem corymbose above, woolly; leaves linear-lanceolate, with revolute margins, tomentose; heads corymbose; involucre white. — Upper districts of North Carolina, and northward. Sept. – Oct. — Stem 1° – 2° high.

2. **A. plantaginifolia,** Hook. Stoloniferous; stems scape-like; radical leaves spatulate or obovate, hoary, becoming smooth above, 3-ribbed; those of the stem few, linear or lanceolate; heads small, in a terminal cluster, sometimes single and larger; involucre white or purplish. — Sterile soil, Florida, and northward. March – May. — Stem 6′ – 12′ high.

32. GNAPHALIUM, L. EVERLASTING.

Heads many-flowered, discoid; exterior and pistillate flowers very slender, mostly in several rows; the central perfect. Scales of the involucre appressed, scarious. Receptacle flat, naked. Achenia terete or more or less flattened. Pappus a single row of capillary bristles. — Woolly or downy herbs. Leaves alternate. Heads in crowded spikes or corymbs. Involucre colored.

1. **G. polycephalum,** Michx. Stem woolly or villous, sometimes viscid, white, branching above; leaves linear, sessile, undulate, white beneath; heads corymbose; scales of the involucre white, obtuse. — Old fields and open woods, common. Sept. – Oct. ① — Stem 2° high. Perfect flowers few.

2. **G. purpureum,** L. Woolly or tomentose and hoary throughout; stems branching at the base, ascending, simple; lowest leaves spatulate-lanceolate, the upper linear; heads in crowded spikes. — Cultivated ground, very common. April – June. ① — Stems 4′ – 12′ high.

33. FILAGO, L. CUDWEED.

Heads discoid, many-flowered; the central flowers perfect, but often abortive, the outer ones very slender and pistillate. Involucre of few woolly scales. Lower part of the long or top-shaped receptacle chaffy, the upper part naked. Pappus of the perfect flowers capillary, of the pistillate none. — Low woolly annuals.

1. **F. Germanica,** L. Stem forking; leaves lanceolate, entire; scales of the involucre and chaff cuspidate. — Waste ground. Introduced.

TRIBE IV. SENECIONIDEÆ. *Heads discoid or radiate; branches of the style, in the perfect flowers, linear, convex externally, hairy or brush-shaped at the apex, and truncate, or produced into a conical or hispid appendage; the stigmatic lines terminating at the appendage, not confluent.*

34. POLYMNIA, L.

Heads radiate, many-flowered; the rays pistillate, in a single row; those of the disk tubular, 5-toothed, sterile. Scales of the involucre in two rows; the outer leafy, spreading; the inner smaller, membranaceous, clasping the obovoid fertile achenia. Receptacle chaffy. Pappus none. — Coarse branching perennial herbs, with angular or lobed leaves, and heads of yellow flowers in corymbose panicles.

1. **P. Canadensis,** L. Viscid-pubescent; lowest leaves opposite, petioled, pinnatifid; the upper alternate, angled or lobed; outer scales of the involucre acuminate, hairy and viscid; rays shorter than the involucre. — Mountains of North Carolina. July – August. — Stem 2° – 5° high. Heads small. Rays pale yellow.

2. **P. Uvedalia,** L. Stem smooth, or rough-pubescent; leaves broadly ovate, 3 – 5-lobed, coarsely toothed, rough above, pubescent beneath, abruptly contracted into a sinuate-winged petiole; outer scales of the involucre ciliate, obtuse; rays much longer than the involucre. — Rich soil. July – August. — Stem 3° – 6° high. Rays bright yellow.

35. ACANTHOSPERMUM, Schrank.

Heads monœcious, radiate, many-flowered; the rays pistillate, in a single row; disk flowers staminate, tubular, 5-toothed. Involucre of 5 elliptical scales. Receptacle flat. Achenia compressed, armed on the back with rigid hooked prickles, and enclosed in the outer scales of the chaffy receptacle. — Diffusely branching herbs, with opposite leaves, and solitary heads of yellow flowers.

1. **A. xanthioides,** DC. Prostrate, pubescent; leaves petioled, oval or obovate, toothed or entire; chaff of the receptacle which encloses the achenium unarmed. — Introduced in wool from South America several years ago, and now a widely disseminated pest.

2. **A. humile,** DC., with the chaff of the receptacle armed with 2 spines, occurs as a ballast weed at Pensacola.

36. CHRYSOGONUM, L.

Heads many-flowered; the rays 5, pistillate. Disk flowers tubular, 5-toothed, sterile. Scales of the involucre in 2 rows; the exterior oblong, leafy; the interior roundish, clasping the oval compressed 4-angled fertile achenia Receptacle flat, chaffy. Pappus a slightly lobed cup-shaped crown, divided on the inside to the base. — A low hairy stoloniferous perennial herb, with oval or spatulate-oblong opposite crenate leaves, and single heads of yellow flowers borne on a long peduncle.

1. **C. Virginianum,** L. — Dry open woods, Florida to North Carolina. Feb. – April. — Plant at first simple, producing from a tuft of radical leaves a single peduncled head, afterward stoloniferous and branching.

37. SILPHIUM, L.

Heads many-flowered; the rays numerous, pistillate, fertile, in a single row. Disk flowers cylindrical, sterile; the style undivided. Scales of the involucre leafy, imbricated in several rows; the innermost smallest, chaff-like. Receptacle small, with linear acutish chaff. Achenia round or obovate, flat, broadly winged, 2-toothed or emarginate at the apex. Pappus none, or represented by the two teeth of the achenia. — Tall resinous herbs, with alternate opposite or whorled leaves, and large heads of yellow flowers.

* *Stems terete, nearly naked: leaves alternate; the lowest large, serrate or variously lobed, long-petioled; the others small and scattered.*

1. **S. laciniatum,** L. Stem hispid or smooth; leaves very rough or hispid, with clasping petioles, pinnately parted; the divisions oblong or lanceolate, acute, lobed or toothed; heads large, spicate or racemose; scales of the involucre ovate, tapering into a long and spreading point, ciliate; achenia round-obovate, emarginate. — Varies with the more numerous sessile and clasping leaves less deeply parted. (S. gummiferum, *Ell.*) — Prairies of Alabama, and westward. July - August. — Stem 6° - 8° high. Lowest leaves 1° - 2° long. Heads 1½′ - 2′ in diameter.

2. **S. terebinthinaceum,** L. Stem smooth, naked above; leaves rough-hairy, undivided, cordate-oval or oblong, coarsely serrate, on slender petioles; heads loosely panicled; scales of the involucre oval or obovate, obtuse, smooth; achenia obovate, emarginate or 2-toothed. (S. pinnatifidum, *Ell.*, leaves pinnatifid.) — Open woods in the upper districts of Georgia, and westward. July - Sept. — Stem 4° - 8° high. Radical leaves 2° long. Heads 1′ wide.

3. **S. compositum,** Michx. Smooth; leaves cordate-ovate or reniform, angularly toothed or variously lobed, long-petioled; heads small, corymbosely panicled; scales of the involucre obovate or oblong, obtuse; achenia roundish, deeply emarginate; rays - 10. — Sandy open woods, Florida to North Carolina. July - Sept. — Stem 3° - 6° high. Leaves 6′ - 12′ long. Heads ½′ in diameter.

* * *Stems leafy: leaves undivided, alternate, opposite, or whorled.*

+ *Stems terete.*

4. **S. trifoliatum,** L. Stem smooth; leaves rough, lanceolate, slightly serrate, on short bristly petioles; the upper alternate or opposite; the lower 3 - 4 in a whorl; heads small, loosely panicled; scales of the involucre ovate or oval, fringed on the margins; achenia oblong-obovate, 2-toothed. — Open woods along the mountains of Georgia, and northward. July - Sept. — Stem 4° - 6° high. Leaves 4′ - 6′ long.

5. **S. Asteriscus,** L. Stem smooth or hirsute; leaves rough, opposite or alternate, or the lower sometimes 3 in a whorl, lanceolate or oblong, toothed, on short hirsute petioles; the upper sessile and commonly entire; heads somewhat corymbose, rather large; exterior scales of the involucre ovate, acute, short-ciliate; the interior oblong, obtuse; achenia broadly obovate, 2-toothed. — Var. DENTATUM. Lower leaves on rather long petioles, sometimes incisely toothed; achenia slightly emarginate at the apex. (S. dentatum, *Ell.*) — Dry open woods, Florida to North Carolina. July - Sept. — Stem 2° - 4° high. Leaves 3′ - 5′ long. Rays showy.

6. **S. lævigatum,** Ell. Stem smooth; leaves scabrous, thick, lanceolate-oblong, acute at each end, opposite, coarsely serrate, on short petioles; the upper nearly sessile; heads small, loosely corymbose; scales of the involucre ovate, obtuse, spreading; achenia oval-obovate, narrowly winged, emarginate and slightly 2-toothed at the apex. — Upper districts of Georgia and Alabama. July – Sept. — Stem 2° – 3° high. Lowest leaves 6′ – 8′ long.

7. **S. scaberrimum,** Ell. Stem mostly hispid; leaves mostly opposite, ovate, acute, serrate, very rough on both sides, on short petioles; heads corymbose; scales of the involucre ovate, ciliate; achenia nearly orbicular, broadly winged, deeply notched at the apex. — Florida to Tennessee, and westward. August – Sept. — Stem stout, 3° – 4° high, becoming smoothish. Leaves 3′ – 4′ long.

8. **S. integrifolium,** Michx. Stem 3° – 6° high, simple, smooth or scabrous; leaves oblong-ovate, the lower 3′ – 5′ long, short-petioled, often serrate, the upper sessile, denticulate or entire; heads small, corymbose; scales of the involucre round-ovate; achenia 3″ long, obovate, narrowly winged, 2-toothed. — Tennessee, and northward. July.

9. **S. brachiatum,** Gatt. Stem 3° – 5° high, smooth and glaucous; leaves long-petioled, opposite, hastate-ovate or oblong-ovate, dentate, rough above, the upper entire; flowering branches spreading, few-flowered; heads ½′ long, long-peduncled; achenia broadly obovate, narrowly winged, emarginate; rays few. — Cumberland Mountains, Tennessee. July.

+ + *Stems square.*

10. **S. perfoliatum,** L. Stem and branches smooth or hairy; leaves large, opposite, ovate or ovate-oblong, coarsely toothed, rough on both sides, or pubescent or hairy beneath, their bases, or winged petioles, united; the uppermost commonly entire, simply serrate; corymb trichotomous; the central heads long-peduncled; scales of the involucre ovate, obtuse; achenia broadly obovate, emarginate. — Banks of streams along the mountains of Georgia, and northward. July – Sept. — Stem 4° – 6° high. Leaves 6′ – 12′ long. Heads large.

38. BERLANDIERA, DC.

Heads many-flowered. Ray flowers few, pistillate; those of the disk tubular, 5-toothed, sterile. Scales of the involucre in three rows, the innermost largest, membranaceous, adherent to the fertile achenia. Receptacle chaffy, the chaff dilated upward, obtuse, hooded, partly embracing the sterile achenia; the inner ones gradually narrower. Fertile achenia in a single row, obovate, flattened, wingless, pubescent on the inner face, the apex entire. — Perennial downy or hoary herbs, with alternate leaves, solitary or corymbose heads, and yellow rays.

1. **B. tomentosa,** Nutt. Stem leafy, hoary-tomentose; leaves oblong-ovate, crenate, hoary beneath, closely pubescent above; the lowest tapering into a petiole; the upper cordate, sessile; heads at length numerous, corymbose-panicled. — Dry pine barrens, Florida to North Carolina, and westward. June – August. — Stem 1° – 3° high. Leaves 2′ – 3′ long.

2. **B. subacaulis,** Nutt. Rough-pubescent and somewhat hoary; leaves chiefly radical, clustered, sinuate-pinnatifid; heads solitary on the peduncle-like stem, or few on the peduncle-like branches of the short and nearly leafless stem. — East Florida and Georgia. May – August. — Peduncle 6′ – 8′ long. Leaves 3′ long.

39. LINDHEIMERIA, Gray & Engelm.

Ray flowers 4 – 5. Scales of the involucre in two rows, the outer ones linear, the inner ones oblong, adherent to the base of the fertile achenia, and to the adjacent scales of the receptacle. Achenium oval, flat, the narrow wings prolonged into a 2-toothed pappus. Otherwise like Berlandiera.

1. **L. Texana,** Gray & Engelm. — Alabama (*Mohr*), and westward. — Annual, hirsute, erect, 1° – 2° high. Leaves oblong, dentate. Heads in a dichotomous panicle, nodding. Flowers yellow.

40. PARTHENIUM, L.

Heads many-flowered; the ray flowers 5, in a single row, short, obcordate, pistillate; those of the disk tubular, 5-toothed, sterile. Anthers slightly united. Scales of the involucre in two rows, ovate or roundish. Receptacle conical, chaffy; the chaff dilated upward. Achenia smooth, compressed, thick-margined. Pappus of two awn-like or roundish scales. — Herbs. Leaves alternate. Flowers white.

1. **P. integrifolium,** L. Perennial; stem erect, simple, rough; leaves undivided, ovate or oblong-ovate, serrate; the lowest narrowed into a long petiole; panicle dense, corymbose; involucre hoary; pappus minute, awn-like. — Dry woods in the upper districts. August. — Stem 1° – 2° high. Lowest leaves 4′ – 6′ long. Rays conspicuous.

2. **P. Hysterophorus,** L. Annual, pubescent; stem diffuse; leaves pinnatifid, with linear toothed lobes; heads loosely panicled; scales of the pappus oval. — Waste places, Florida, and westward.

41. IVA, L.

Heads few- or many-flowered; the flowers all tubular; the marginal ones (1 – 5) with a short corolla, pistillate and fertile; the central 5-toothed, sterile. Anthers nearly distinct. Scales of the involucre 3 – 5, in a single row, oval or obovate, distinct or partly united, or 6 – 9 and imbricated. Chaff of the small receptacle linear or spatulate. Achenia biconvex, obovate. Pappus none. — Branching herbs or shrubs, with opposite or (the upper) alternate mostly fleshy leaves, and small axillary nodding heads of whitish flowers.

* *Scales of the involucre 3 – 5, in a single row.*

1. **I. frutescens,** L. Shrubby; leaves lanceolate or oblong, sharply toothed-serrate, 3-ribbed, smoothish; scales of the involucre 5, orbicular; fertile flowers 5. — Saline marshes, Florida, and northward. August – Sept. — Shrub 4° – 8° high.

2. **I. microcephala,** Nutt. Annual, rough with rigid appressed hairs; stem slender, simple or branched; leaves narrow-linear, entire; heads minute,

6-12-flowered; scales of the involucre 4-5, obovate, ciliate; fertile flowers 1-3. — Dry barren soil, Florida to South Carolina. August-Sept. — Stem 1°-2° high.

3. **I. ciliata,** Willd. Annual, hispid; stem branching; leaves ovate, acuminate, coarsely serrate; spikes dense, the bracts elongated; scales of the involucre 3-4, roundish, ciliate; fertile flowers mostly 3. — Mississippi (*Carpenter*), and westward. Sept. — Stem 2°-3° high. Leaves 3′-4′ long.

* * *Scales of the involucre* 6-9, *imbricated in* 2-4 *rows.*

4. **I. imbricata,** Walt. Somewhat shrubby, smooth; leaves fleshy, lanceolate, the lower ones slightly serrate and 3-ribbed, the upper alternate and entire; heads many-flowered; outer scales of the involucre orbicular; the inner obovate, toothed-margined; fertile flowers 2-4, the short corolla 5-parted. — Varies with smaller and fewer-flowered heads, and the corolla of the fertile flower truncate. — Drifting sands along the coast, Florida to North Carolina. August-Sept. — Stem 1°-2° high. Leaves 1′ long.

42. AMBROSIA, Tourn.

Heads monœcious, in racemes or spikes; the upper ones sterile, nodding; the lower pistillate and fertile. Involucre of the sterile flowers composed of 7-12 united scales, 5-20-flowered. Receptacle naked or with slender chaff. Corolla 5-toothed. Involucre of the fertile flowers 1-flowered, ovoid or turbinate, entire, closed, pointed, commonly with a row of tubercles or spines near the apex. Corolla and stamens none. Achenia globose or ovoid. Pappus none. — Herbs. Leaves mostly pinnately lobed. Fertile flowers single or clustered at the base of the sterile spike, or in the axils of the upper leaves, bracted. Flowers whitish.

* *Heads of sterile flowers densely spiked, the top-shaped involucre produced on one side into a long recurved appendage: fertile heads axillary,* 4-*angled.*

1. **A. bidentata,** Michx. Annual, hirsute, very leafy; leaves mostly alternate, lanceolate, sessile or clasping, entire or with 2 short basal lobes; fruit acute, with 4 short spines. — Northern Mississippi, and westward. — Stem 1°-2° high.

* * *Heads of sterile flowers cup-shaped, toothed.*

2. **A. hispida,** Pursh. Stem prostrate and shrubby at the base: the branches hirsute; leaves bipinnatifid, thickish; spikes few, the terminal one elongated; fruit downy, unarmed. — Sandy shores, South Florida, forming large clusters.

3. **A. artemisiæfolia,** L. (Ragweed.) Annual, erect, hairy or smoothish; leaves bipinnatifid, with linear lobes; the upper often entire; spikes single or panicled; fertile flowers single, clustered, or sometimes spiked; fruit nearly globose, armed with six short teeth. (A. elatior, *L.* A. paniculata, *Michx.*, spines of the fruit obsolete.) — Cultivated ground, everywhere. July-Sept. — Stem 1°-4° high.

4. **A. trifida,** L. Stem tall (6°-10°), 4-sided, rough-hairy; leaves rough, palmately 3-5-lobed, with the lobes ovate-lanceolate and serrate, or all undi-

vided; fruit obovate, 6-toothed around the base of the conically beaked apex, clustered. — River banks and rich soil, Florida, and northward. August - Sept.

43. XANTHIUM, Tourn. Cocklebur.

Heads monœcious, spiked; the upper ones many-flowered, sterile, with the scales of the involucre separate, in a single row; the receptacle oblong, chaffy, and the short corolla 5-toothed; the lower ones fertile, consisting of two pistillate flowers, enclosed in a 2-celled oblong closed involucre, which is armed externally with numerous hooked spines or bristles, and terminated by one or two stout beaks. Corolla filiform. Achenium oblong, solitary in each cell. — Coarse annual herbs. Leaves alternate, lobed and petioled.

1. **X. strumarium,** L. Stem spineless, rough, branched; leaves large, broadly cordate, 3 - 5-lobed; the lobes toothed, acute and rough on both sides; fruit oval, pointed by two straight and smooth beaks. — Var. ECHINATUM. Leaves obtuse, less strongly lobed; the incurved beaks and spines of the larger (1′) fruit bristly. — Cultivated fields and waste places, common. July - Sept. — Stem 1° - 4° high, often spotted.

2. **X. spinosum,** L. Stem armed with triple spines, much branched; leaves lanceolate, entire or 3-lobed, hoary-tomentose beneath; fruit pointed by a single beak. — Waste places around the larger seaports, and sparingly in the interior. Introduced. August - Sept. — Stem 2° - 3° high.

44. ECLIPTA, L.

Heads many-flowered; the ray flowers short, pistillate, in a single row; those of the disk tubular, 4-toothed, perfect. Scales of the involucre 10 - 12, in 2 rows. Receptacle flat, with bristly chaff. Achenia 3 - 4-angled, hairy at the apex Pappus none. — Rough branching annuals, with opposite lanceolate leaves. Heads small, axillary, on peduncles of varying length. Flowers white.

1. **E. alba,** Hasskarl. Stem erect or diffuse, terete, tumid below the joints, sprinkled, like the leaves, with appressed rigid hairs; leaves oblong-lanceolate, acute, serrate, sessile, or narrowed into a petiole; peduncles single or 2 - 3 together. — Wet places. Sept. - Oct. — Stem 6′ - 3° long.

45. BORRICHIA, Adans.

Heads many-flowered; ray flowers pistillate, in a single row; those of the disk tubular, 5-toothed, perfect. Scales of the hemispherical involucre imbricated; the exterior ones leafy. Receptacle flat, with rigid persistent chaff. Achenia somewhat wedge-shaped, 3 - 4-angled. Pappus a 3 - 4-toothed border. — Fleshy maritime shrubs. Leaves opposite and slightly connate. Heads solitary, peduncled. Flowers yellow.

1. **B. arborescens,** DC. Smooth, or the young branches pubescent; leaves spatulate-lanceolate, abruptly pointed, entire; scales of the involucre as long as the disk; the inner ones and chaff of the receptacle obtuse. — South Florida. Dec. — Shrub 5° - 10° high.

2. **B. frutescens,** DC. Branches and leaves hoary-tomentose; leaves varying from spatulate-linear to obovate-oblong, entire, or toothed near the base; scales of the involucre shorter than the disk, the inner ones and chaff of the receptacle spine-pointed. — Saline marshes, Florida to North Carolina. June – Oct. — Stem 1° – 2° high.

46. WEDELIA, Jacq.

Heads many-flowered, radiate. Flowers of the ray pistillate, of the disk perfect, tubular, 5-toothed. Scales of the involucre in 2 – 3 rows, the outer ones leafy, the inner membranaceous. Receptacle convex, chaffy. Achenia obovate or compressed. Pappus calyx-like, composed of united dentate and ciliate scales. — Herbs or undershrubs, with opposite serrate leaves, and mostly solitary yellow flowers.

1. **W. carnosa,** Rich. Herbaceous, smooth, creeping; leaves sessile, thick, obovate, slightly 3-lobed; heads axillary, peduncled; outer scales of the involucre oblong, as long as the disk, the inner ones smaller; achenia wingless. — Springy places, Key Biscayne (*Curtiss*).

47. MELANTHERA, Rohr.

Heads many-flowered; the flowers all tubular and perfect, 5-cleft. Scales of the involucre imbricated in 2 rows. Chaff of the convex receptacle rigid, persistent, partly sheathing the flowers. Achenia 4-angled, short, truncate at the apex. Pappus of 2 – several rough rigid deciduous awns or bristles. — Rough perennial herbs, with branching 3 – 4-angled stems, opposite undivided or 3-lobed serrate petioled leaves, and scattered heads of white flowers, on long peduncles. Anthers black.

1. **M. hastata,** Michx. Stem commonly spotted; leaves ovate, entire, or more or less hastate-3-lobed, serrate; scales of the involucre lanceolate, acute; chaff of the receptacle spine-pointed. — Light rich soil, Florida to South Carolina. August – Sept. — Stem 3° – 6° high.

2. **M. deltoidea,** Michx. Leaves deltoid-ovate, undivided; scales of the involucre ovate; chaff of the receptacle obtuse, mucronate. — South Florida.

3. **M. lanceolata,** Benth. Leaves lanceolate, or narrower and tapering from the apex to the base; scales of the involucre oblong-lanceolate; chaff of the receptacle cuspidate. — Coast of South Florida.

48. ZINNIA, L.

Heads many-flowered; the ray flowers pistillate; those of the disk perfect, tubular, with 5 velvety lobes. Scales of the involucre imbricated, oval or roundish, margined. Chaff of the conical receptacle clasping the disk flowers. Ray flowers oblong, rigid persistent. Achenia of the disk compressed, with a 1 – 2-awned pappus; of the rays 3-angled, destitute of a pappus. — Annual herbs, with sessile entire 3-ribbed leaves, and solitary heads, on long inflated peduncles.

1. **Z. pauciflora,** L. Stem erect, hairy, branching; leaves oblong-lanceolate; chaff of the receptacle obtuse; pappus of the disk flowers 1-awned; rays red or purple. — Waste places, Florida to North Carolina. Introduced. July – Sept. — Stem 1° – 2° high. Rays sometimes fading into yellow.

49. HELIOPSIS, Pers.

Heads many-flowered; the ray flowers pistillate; those of the disk tubular, perfect, 5-toothed. Scales of the involucre in 2 – 3 rows; the exterior longer, leafy. Chaff of the conical receptacle lanceolate, partly clasping the 4-angled truncated achenia. Pappus minute or none. — Perennial herbs with the habit of Helianthus. Rays yellow.

1. **H. lævis,** Pers. Smooth; stem slender, branching; leaves ovate or ovate-lanceolate, acute or acuminate, sharply serrate, 3-ribbed at the base, on slender petioles; peduncles elongated; scales of the involucre obtuse; rays deciduous; achenia smooth and truncate. — Dry open woods, Florida, and northward. August – Sept. — Stem 2° – 3° high. Leaves 2′ – 3′ long, sometimes scabrous.

2. **H. gracilis,** Nutt. Stem more slender, often, like the leaves, somewhat scabrous; heads smaller; achenia pubescent, crowned with a minute chaffy pappus; otherwise like the last. — Dry woods in the upper districts. August.

50. TETRAGONOTHECA, Dill.

Heads many-flowered; the ray flowers (6 – 9) pistillate; those of the disk tubular, 5-toothed, perfect. Involucre double, 4-sided; the exterior of 4 ovate leaves partly united below; the interior of about 8 small chaffy scales. Chaff of the conical receptacle lanceolate, acute. Achenia obovoid, nearly terete, truncated. Pappus none. — A low hairy and clammy perennial herb, with large sessile or connate, oval or oblong, coarsely toothed leaves, and large solitary heads of yellow flowers, on long peduncles.

1. **T. helianthoides,** L. — Dry sandy soil, Florida to North Carolina. July. — Stems several, stout, 1° – 1½° high. Leaves 4′ – 6′ long. Head 2′ in diameter.

51. SPILANTHES, Jacq.

Heads many-flowered; the ray flowers often wanting. Scales of the involucre in 2 rows, appressed, shorter than the disk. Receptacle convex or elongated; the membranaceous chaff embracing the flowers. Achenia of the disk compressed, mostly ciliate on the margins, naked at the apex, or with 1 – 3 bristly awns; those of the rays 3-angled. — Chiefly annual acrid herbs, with opposite undivided leaves, and solitary heads of yellow flowers on long peduncles.

1. **S. repens,** Michx. Stem branching, smooth or pubescent, decumbent and rooting at the base; leaves ovate-lanceolate or lanceolate, slightly or coarsely serrate, narrowed into a petiole; heads small, ovoid, becoming oblong-conical; achenia awnless or minutely 1 – 2-awned; rays 12. — Muddy banks. Sept. – Oct. ♃ — Stem 6′ – 2° long.

52. ECHINACEA, Mœnch.

Heads many-flowered; the ray flowers pistillate, but sterile, drooping; those of the disk tubular and perfect. Scales of the involucre lanceolate, in three or more rows, spreading. Receptacle at length conical. Chaff of the receptacle rigid, spine pointed, longer than the disk flowers. Achenia short, 4-sided, crowned with a cup shaped toothed pappus. — Perennial sparingly branched herbs, with alternate undivided 3 – 5-ribbed leaves, and large heads terminating the peduncle-like summit of the stem or branches. Rays purple or white.

1. **E. purpurea,** Mœnch. Stem simple, or with peduncle-like branches, smooth or hairy; leaves ovate lanceolate, serrate, rough; the lowest ones ovate, on long petioles; scales of the involucre imbricated in 3 – 5 rows, ciliate; rays about 12, lanceolate, purple. — Varies with the stem and leaves smooth; rays strap shaped, white. — Rich woods in the upper districts. June – August. — Stem 2° – 5° high. Rays 2′ – 3′ long.

2. **E. angustifolia,** DC. Hirsute; stem simple; leaves lanceolate, entire, 3-ribbed; the lowest tapering into a long petiole; scales of the involucre imbricated in 2 – 3 rows; rays 12 – 15, narrow, pale purple. — Prairies and rocky woods in the upper districts. May – July. — Stem 1° – 2° high. Lowest leaves 6′ long.

53. RUDBECKIA, L.

Heads many-flowered; the ray flowers neutral; those of the disk tubular, perfect. Scales of the involucre in about two rows, leafy, spreading. Receptacle conical or cylindrical; the chaff not rigid, and mostly shorter than the disk flowers. Achenia smooth, angled, truncated. Pappus a narrow border, or none. — Chiefly perennial herbs, with alternate entire or lobed leaves, and showy heads terminating the stem or branches. Rays mostly yellow. Disk dark purple or yellowish.

§ 1. *Achenia quadrangular: chaff of the receptacle persistent.*

∗ *Disk ovate or globose.*

+ *Leaves undivided: stem simple or sparingly branched.*

++ *Leaves linear, 3-ribbed, entire.*

1. **R. atrorubens,** Nutt. Smooth, or strigose; stem simple, 2° high; leaves rigid, 4′ – 6′ long, the lower clustered, the upper small and distant; head globose or ovate, solitary; rays wedge-shaped, deep crimson, shorter than the dark purple disk; pappus 4-toothed. — Margins of pine barren ponds. Georgia and Florida. June – July.

2. **R. bupleuroides,** Shuttlw. Smooth throughout; stem slender, branching; leaves 6′ – 12′ long, thin, the lower long-petioled, the upper distant; heads globose; rays linear, yellow, longer than the dark brown disk; pappus cup-shaped. — With the last. June – July. — Stem 2° – 3° high.

++ ++ *Leaves broad, veiny; rays yellow.*

3 **R. hirta,** L. Hirsute; stem and branches naked at the summit; leaves lanceolate or oblong, serrate, the upper sessile, the lowest narrowed

into a petiole; disk roundish, purplish brown; chaff of the receptacle acute, hairy at the apex. — Dry soil. July – August. — Stem rigid, 1° – 2° high. Rays longer or shorter than the involucre.

4. **R. bicolor,** Nutt. Hirsute; stem mostly simple, 1′ – 1½′ high; leaves oblong, sessile, the lowest petioled; heads small; scales of the involucre oblong; rays yellow, the lower half brownish purple. — Georgia. An immigrant from the West.

5. **R. fulgida,** Ait. Pubescence hirsute, spreading; stem mostly branching, 2° high; leaves narrowly or broadly lanceolate, tapering into a slender petiole, slightly serrate, the upper sessile, or partly clasping; heads long-peduncled; disk globose, ½′ wide; rays 10 – 14, lanceolate. — Dry woodlands. August – Sept.

6. **R. spathulata,** Michx. Pubescence strigose, appressed; stem 1° – 2° high, often simple; leaves generally broader, the lowest contracted into broadly winged petioles; heads smaller; rays fewer (6 – 8) and broader, 6″ – 8″ long. — Open woods in the upper districts. August – Sept.

7. **R. speciosa,** Wenderoth. Hirsute; stem branching, 2° – 3° high; leaves oblong-lanceolate, tapering at the base, serrate, and often coarsely toothed, the earliest ovate, contracted into a long (6′ – 10′) slender petiole; heads large, long-peduncled; rays numerous, 1′ long; disk globose, dark purple. — Rich soil in the upper districts. August – Sept.

8. **R. mollis,** Ell. Stem villous, branching; leaves oblong, obscurely serrate, sessile and partly clasping, soft-tomentose on both sides; the lowest somewhat spatulate; scales of the involucre numerous, linear lanceolate, villous, reflexed, half as long as the (12 – 20) rays; disk brownish; chaff of the receptacle rather obtuse, tomentose at the apex. — Dry soil, Florida and Georgia. August – Oct. — Stem 2° – 3° high.

9. **R. Heliopsidis,** Torr. & Gray. Rhizoma prostrate; stem pubescent, with few peduncle-like branches at the summit; leaves ovate or oval, slightly serrate, obtuse, smoothish, 5-ribbed, petioled; scales of the involucre oblong, shorter than the brownish purple subglobose disk, and (10 – 12) oblong-linear rays; chaff of the receptacle obtuse, pubescent at the apex. Low ground in the upper districts of Georgia and Alabama. August – Sept. — Stem 2° high.

+ + *Leaves divided: stem paniculately or corymbosely branched.*

10. **R. triloba,** L. Biennial, rough-hairy; stem much branched; lowest leaves long-petioled, ovate or oval, simple, or with two small lateral lobes, serrate; lower stem leaves 3-lobed; the upper simple, sessile, often entire; heads small, numerous; scales of the involucre narrow-lanceolate, shorter than the rays; disk almost black; chaff of the receptacle awl-pointed, smooth, as long as the flowers. — Dry ground along the mountains. August – Sept. — Stem 2° – 4° high.

Var. **rupestris,** Gray. Sparsely pubescent, stout; lower leaves 3-parted; heads globular, ¾′ wide, rays orange-yellow. — High mountains of North Carolina.

Var. **pinnatiloba,** Torr. & Gray. More slender; lower leaves mostly pinnately 5 – 7-lobed; involucral scales linear, acute. — Dry woods, Mariana, West Florida. August.

11. **R. laciniata,** L. Stem smooth, tall (4° – 6°), branching; leaves rough; the lowest pinnately divided, the divisions lanceolate or oblong, lobed or pinnatifid; the middle ones 3 – 5-parted; the uppermost often undivided, toothed; disk yellowish, ovate or conical; rays large, drooping; chaff of the receptacle truncate, pubescent at the apex, about as long as the 3-angled achenia. — Swamps, Florida, and northward. July – August. — Leaves large. Rays 1′ – 2′ long.

Var. **humilis,** Gray! Stem 2° – 4° high, corymbosely branched; lowest leaves mostly entire, round-cordate; stem leaves 3 – 5-lobed; disk globose. — River banks along the mountains of Georgia. August.

12. **R. heterophylla,** Torr. & Gray. Pubescent; stem corymbose above; leaves coarsely serrate, rough above, tomentose beneath; the lowest orbicular-cordate or 3 – 5-parted, on long petioles; the middle ones 3-lobed; the uppermost ovate, sessile and entire; disk globose, yellowish; rays drooping; chaff of the receptacle acute; achenia 3-sided. — Swamps, Middle Florida. August. — Stem 3° – 4° high. Leaves and heads much smaller than in the preceding.

* * *Disk columnar, elongated: stems tall, simple.*

13. **R. maxima,** Nutt. Smooth; leaves large, membranaceous, oval or oblong, slightly toothed or entire, feather-veined, the lower ones petioled, the upper clasping; head solitary, long-peduncled; rays large, drooping. — Wet pine barrens, West Florida, and westward. August. — Stem 4° – 9° high. Lowest leaves 8′ –12′ long. Rays 2′ long.

14. **R. nitida,** Nutt. Smooth and shining; stem tall, naked above; leaves rigid, oblong-lanceolate, slightly toothed or entire, 3 – 5-ribbed; the lowest long-petioled; the upper partly clasping, small; rays large, drooping; disk brown. — Borders of swampy thickets, Georgia, Florida, and westward. July. — Stem 3° – 5° high. Lowest leaves 4′ – 6′ long.

§ 2. *Achenia terete, striate: chaff of the receptacle deciduous.* — DRACOPIS.

15. **R. amplexicaulis,** Vahl. Annual, glabrous, branching, 1° – 3° high; leaves oblong, clasping; heads terminal, showy; scales of the involucre small; disk cylindrical, brown; achenia small. — New Orleans (*Dr. Hale*), and westward.

54. LEPACHYS, Raf.

Scales of the involucre few and small. Chaff of the oblong or columnar receptacle truncate and thickened at the apex. Achenia flattened and margined. Pappus 2-toothed or none. Otherwise like Rudbeckia. — Perennials. Leaves pinnately divided. Rays large, drooping, yellow.

1. **L. pinnata,** Torr. & Gray. Rough with short appressed hairs; stem sparingly branched; divisions of the leaves 3 – 7, lanceolate, acute, serrate or entire; disk yellowish, oval or oblong, shorter than the rays; pappus obscurely 2-toothed. — Dry soil, West Florida, Georgia, and westward. July - Sept. — Stem 3° – 4° high. Rays 2′ long.

55. GYMNOLOMIA, HBK.

Scales of the involucre in two rows, the outer leafy, spreading, the inner shorter, and similar to the rigid lanceolate cuspidate chaff of the conical receptacle. Achenia short, striate. Pappus none. Otherwise like Rudbeckia, with the habit of Helianthus.

1. **G. Porteri,** Gray. Annual, rough with short scattered hairs; stem paniculately branched; leaves lanceolate, entire, narrowed at each end, fringed at the base; exterior scales of the involucre linear, as long as the yellow disk; rays 7 – 9, longer than the disk; achenia biconvex, pubescent. — Stone Mountain, Georgia. — Stem 2° – 3° high.

56. HELIANTHUS, L. SUNFLOWER.

Heads many-flowered; the ray flowers neutral; those of the disk tubular and perfect. Scales of the involucre imbricated in three or more rows, with or without leafy spreading tips. Receptacle flat or convex, chaffy. Achenia 4-angled, usually compressed. Pappus of 2 (rarely 3 – 4) caducous chaffy scales or awns. — Annual or perennial herbs, with opposite or alternate, commonly 3-ribbed, undivided leaves. Heads solitary, terminating the stem or branches. Disk yellow or dark purple. Rays yellow.

* *Annual: disk dark purple: chaff of the receptacle 3-toothed: leaves on long and slender petioles: achenia pubescent.*

1. **H. Floridanus,** Gray (in part). Annual; stem smooth, branching, 4° – 6° high; leaves broadly lanceolate, denticulate, scabrous, the lower opposite; scales of the involucre lanceolate, smooth or ciliate; rays 10 – 13; chaff of the receptacle entire; achenia rugulose. — Dry old fields, East Florida.

2. **H. debilis,** Nutt. Rough with scattered rigid hairs, villous when young; stem erect or decumbent, branched, somewhat spotted; leaves coarsely serrate, acuminate, undulate, the lowest deltoid-ovate, cordate, opposite, the upper ovate-lanceolate; scales of the involucre lanceolate-subulate; rays 15 – 20. — Sandy shores, Florida, and westward. July – Sept. — Stem 1° – 3° high.

* * *Perennial: disk dark purple.*

+- *Rays minute or wanting.*

3. **H. Radula,** Torr. & Gray. Stem simple, ascending, leafy and hirsute towards the base, naked and smoothish above; leaves thick, entire, rugose, hirsute, the 4 radical ones large, roundish or rhombic; spreading; the lower ones obovate, opposite; the uppermost small, linear; scales of the involucre oblong-ovate; rays mostly wanting; chaff of the receptacle acuminate. — Low sandy pine barrens, Georgia, Florida, and Alabama. Oct. — Stem 2° high. Heads rather large.

+- +- *Rays conspicuous.*

4. **H. angustifolius,** L. Stem rough-hairy or smoothish, simple, or paniculately branched; leaves linear, elongated, entire, with the margins revolute; the lowest ones opposite; scales of the involucre lanceolate, acuminate; chaff of the receptacle 3-toothed; rays 12 – 18, showy. — Low ground common. Oct. — Stem 2° – 6° high. Leaves 3′ – 6′ long.

5. **H. heterophyllus,** Nutt. Hirsute or hispid; stem slender, mostly simple, naked above; leaves opposite, thick, entire; the lower lanceolate or oblong; the others linear, remote; scales of the involucre lanceolate, acuminate, ciliate; chaff of the receptacle 3-toothed, the middle tooth cuspidate; rays 15 – 20, elongated. — Pine barren swamps, Florida to North Carolina, and westward. Sept. – Oct. — Stem 2° – 4° high. Lowest leaves 2′ – 6′ long. Rays 1½′ long.

6. **H. atrorubens,** L. Hirsute or hispid; stem sparingly branched and somewhat naked above; leaves opposite, oval, serrate, the lowest large and long-petioled; the upper small, sessile, distant; scales of the involucre oval or oblong, obtuse; chaff of the receptacle acute; rays about 12; achenia pubescent at the apex. — Dry soil, Florida to North Carolina. Sept. – Oct. — Stem 2° – 5° high. Lowest leaves 4′ – 6′ long. Heads rather small.

7. **H. rigidus,** Desf. Stem leafy, stout, mostly simple, rough; leaves oblong-lanceolate, slightly serrate or entire, thick and rigid, very rough on both sides, narrowed into short connate petioles; scales of the involucre ovate, acute, appressed; chaff of the receptacle obtuse; rays 20 – 25. (H. scaberrimus, *Ell.*) — Western districts of Georgia (*Elliott*), and westward. Sept. — Stem 1° – 3° high. Heads showy.

* * * *Perennial: disk yellow: heads large or middle-sized.*

8. **H. lætiflorus,** Pers. Stem stout, rough, branching; leaves oval-lanceolate, acuminate, serrate, rigid, very rough on both sides, on short petioles; heads solitary or corymbose; scales of the involucre ovate-lanceolate, acute, ciliate, appressed; chaff of the receptacle somewhat 3-toothed or entire; rays 12 – 16, elongated. (H. tricuspis, *Ell.*, with the leaves all nearly entire; chaff of the receptacle 3-toothed.) — Dry soil, in the western districts of Georgia, and westward. Sept. — Stem 3° – 4° high. Leaves 5′ – 8′ long. Rays 1½′ long.

9. **H. occidentalis,** Riddell, var. **Dowellianus,** Torr. & Gray. Nearly smooth; stem branched above; leaves pubescent, triple-nerved; the lowest opposite, broadly ovate, obtuse; the upper alternate, oblong-ovate; peduncles long and slender; scales of the involucre lanceolate, acuminate, slightly ciliate, shorter than the disk, appressed; rays 12 – 15. — Mountains of North Carolina. August – Sept. — Stem 4° – 5° high. Lower leaves 7′ – 8′ long, 5′ – 6′ wide. Rays 1′ long.

10. **H. mollis,** Lam. Villous or tomentose and somewhat hoary; stem mostly simple; leaves ovate or oblong-ovate, acute, slightly serrate, cordate and clasping; the upper often alternate; heads few, on short peduncles; scales of the involucre lanceolate, acute; chaff of the receptacle entire; rays 15 – 25. — Dry open woods in the upper districts of Georgia, and westward. Sept. — Stem 2° – 3° high. Leaves 2′ – 3′ long. Heads thick.

11. **H. giganteus,** L. Stem hirsute, rough, branching above; leaves lanceolate, acuminate, serrate, nearly sessile, rough above, paler and rough-hairy beneath, slightly 3-nerved at the base, all but the lowest alternate; scales of the involucre linear-lanceolate, spreading, hirsute; rays 15 – 20. — Low ground in the upper districts. Sept. — Stem 3° – 10° high. Leaves 2′ - 5′ long. Rays 1′ long.

12. **H. tomentosus,** Michx Stem stout, hirsute, branching, leaves all alternate, or the lowest opposite, very rough above, tomentose beneath, slightly serrate; the lowest large (6′ – 12′), ovate, on short winged petioles; the upper ones oblong; heads large; scales of the involucre numerous, lanceolate, acuminate, villous, spreading; rays 15 – 20. — Open woods, and margins of fields, Florida to North Carolina. Sept. — Stem 4° – 8° high. Rays 1′ – 1½′ long.

13. **H. tuberosus,** L. Stem tall, branched, smooth below, hirsute above; leaves opposite, ovate or ovate-lanceolate, acuminate, serrate, rough above, pubescent beneath; the lower often slightly cordate, on short winged petioles; scales of the involucre linear-lanceolate, hirsute, about as long as the disk; rays 12 – 15. — Rich soil in the upper districts. Sept. — Stem 5° – 8° high. Lowest leaves 6′ – 12′ long. Heads large. Rays 1½′ long.

14. **H. strumosus,** L. Stem simple or branched, rough above; leaves lanceolate or ovate-lanceolate, acuminate, slightly serrate, short-petioled, very rough above, paler and smooth, or sometimes softly pubescent beneath; scales of the involucre lanceolate, acuminate, as long as the disk, spreading; rays 8 – 10. — Dry soil, common. Sept. — Stem 2° – 4° high, sometimes glaucous. Leaves 3′ – 4′ long.

15. **H. decapetalus,** L. Stem branched, smooth below, rough above; leaves thin, opposite, ovate, acuminate, coarsely serrate, rough on the upper surface, smooth or roughish beneath, abruptly short-petioled; scales of the involucre lanceolate-linear, spreading; the exterior longer than the disk; rays 8 – 10. — Mountains of Georgia, and northward. Sept. — Stem 2° – 5° high. Leaves 3′ – 6′ long.

16. **H. hirsutus,** Raf. Stem hirsute, simple or forking at the summit; leaves opposite, short-petioled, tapering from the broad and rounded, sometimes slightly cordate base, acuminate, serrate, very rough above, paler and rough-hairy beneath; scales of the involucre ovate-lanceolate, acuminate, appressed, as long as the disk; rays about 12. — Dry soil in the upper districts. Sept. — Stem 2° – 5° high. Leaves 3′ – 5′ long.

17. **H. divaricatus,** L. Stem smooth, simple, or corymbosely branched at the summit; leaves opposite, sessile, ovate-lanceolate, serrate, rounded or truncate at the base, very rough above, smooth or rough-pubescent beneath; heads few, on short peduncles; scales of the involucre lanceolate or linear-lanceolate, spreading, as long as the disk; rays 8 – 12. — Dry woods. Sept. — Stem 2° – 3° high. Leaves 3′ – 5′ long.

18. **H. undulatus,** Chapm. Perennial; stem scabrous, 3° – 5° high; leaves linear-lanceolate, sessile and mostly dilated at the base, undulate, the margins revolute, very scabrous above, pubescent beneath, 3′ – 5′ long; involucre pubescent; rays 12 – 18, 1′ long; achenia margined. (H. angustifolius, var., 1st edit. H. Floridanus, *Gray,* in part.) — Marshes near the coast, West Florida. Sept. – Nov.

* * * * *Perennial: disk yellow: heads small: leaves narrow*

19. **H. parviflorus,** Bernh. Stem smooth, much branched; leaves opposite, or the upper ones alternate, lanceolate or ovate-lanceolate, acute,

sparingly serrate, rough above, paler and tomentose beneath, on short petioles; heads numerous; scales of the involucre ovate-lanceolate, appressed; rays 5 - 8. — Dry woods, Florida, and northward. Sept. — Stem 3° - 5° high; the branches forking. Leaves 3′ - 10′ long.

20. **H. Schweinitzii,** Torr. & Gray. Stem hispid, branching above; leaves lanceolate, acuminate, sparingly serrate, nearly sessile, very rough above, hoary-tomentose beneath; the lower ones opposite, the upper alternate and entire; scales of the involucre lanceolate, acute, with spreading tips; rays about 8. — Upper districts of North Carolina (*Curtis*). — Stem 3° - 5° high. Leaves 3′ - 5′ long.

21. **H. lævigatus,** Torr. & Gray. Stem smooth and glaucous, the branches forking; leaves smooth on both sides, opposite, or the uppermost alternate, oblong-lanceolate, acute, entire or serrulate, obscurely 3-ribbed, nearly sessile; scales of the involucre ovate, acute, appressed with spreading tips; rays 6 - 8. — North Carolina (*Curtis*). — Stem 4° - 5° high. Heads twice as large as those of No. 19.

22. **H. longifolius,** Pursh. Very smooth throughout; stem slender, branching; leaves mostly opposite, linear-lanceolate, sessile, entire; the lowest tapering into slender petioles and sparingly serrate; heads few; scales of the involucre ovate-lanceolate, as long as the disk; rays about 10. — Damp rich soil in the western districts of Georgia (*Elliott*). — Stem 3° - 4° high. Leaves 6′ - 8′ long. Rays small.

57. HELIANTHELLA, Torr. & Gray.

Achenia 4-angled, compressed, slightly winged, crowned with a ciliate border, or the angles prolonged into persistent, often lacerated, chaffy scales; otherwise like Helianthus. — Slender perennial herbs, with narrow leaves, and showy heads of yellow flowers.

1. **H. grandiflora,** Torr. & Gray. Hirsute; stem simple; leaves very scabrous, alternate or opposite, lanceolate-linear, or linear, entire; scales of the involucre lanceolate, appressed; pappus of two obtuse lacerated scales. — East Florida. Oct. — Stem 3° - 4° high. Leaves 1′ - 2′ long. Rays nearly 2′ long.

2. **H. tenuifolia,** Torr. & Gray. Hirsute; stem simple, or corymbose at the summit; leaves narrow-linear, entire, the lower ones opposite or whorled; the upper alternate; scales of the involucre lanceolate-subulate, spreading; pappus of 2 - 4 acute awns. — Dry sandy pine barrens, West Florida. June - July. — Stem 1° - 2° high. Rays 1′ - 1½′ long.

58. VERBESINA, L.

Heads mostly many-flowered; the rays pistillate, rarely wanting. Scales of the involucre imbricated in 2 or more rows. Receptacle convex or conical. Achenia erect, compressed, winged or wingless, 2-awned. — Perennial herbs, often with winged stems, and mostly yellow flowers.

* *Heads small: rays* 1 - 5.

1. **V. occidentalis,** Walt. Stem 4-winged, branching; leaves opposite, ovate or ovate lanceolate, acuminate, sharply serrate, 3 ribbed; corymbs

trichotomous; rays 1 – 5, yellow; achenia wingless. — Waste places, roadsides, etc., Mississippi to North Carolina. Sept. — Stem 4° – 6° high.

2. **V. Virginica,** L. Stem 3-winged; the branches mostly wingless, tomentose; leaves ovate or ovate-lanceolate, irregularly serrate or sinuate-lobed, tapering into winged petioles, rough above, downy beneath; corymbs cymose; rays 3 – 4, oval, white; achenia winged. (V. sinuata, *Ell.*) — Dry open woods, Florida and northward. Sept. — Stem 2° – 6° high.

* * *Heads larger: rays* 5 – 14, *yellow, or none.*

+- *Pappus 2-awned.*

3. **V. heterophylla,** Gray. Stem mostly simple, hirsute, terete above, winged below; leaves rough, the lower ones opposite, decurrent, oblong, the upper small, linear, remote; heads single or loosely corymbose; scales of the involucre lanceolate, shorter than the disk and the 5 – 10 linear rays; chaff of the receptacle rigid, acute, longer than the obovate narrowly winged 1 – 2-awned achenia. — Low pine barrens, East Florida. — Stem 2° – 3° high. Lower leaves 2′ – 3′ long.

4. **V. helianthoides,** Michx. Stem hirsute, strongly winged; leaves alternate, ovate-lanceolate, sessile, rough hairy above, downy and hoary beneath; heads few, corymbose; scales of the involucre in 2 – 3 rows, broadly lanceolate, appressed; rays 8 – 14, yellow; achenia slightly winged; awns bristle-like. — Near Louisville, Georgia, and westward. July. — Stem 2° – 3° high. Leaves 3′ long. Rays 1½′ long.

5. **V. nudicaulis,** Gray. Hirsute; stem wingless, somewhat naked and corymbose above; leaves opposite, oblong, sessile, barely acute, the uppermost small and mostly alternate; heads corymbose; scales of the involucre short, in 2 – 3 rows; rays 7 – 12, yellow; achenia obovate-oblong, mostly wingless; awns short. — Dry sandy woods, Georgia, Alabama, and Florida. August – Sept. — Stem 2° high. Leaves 2′ – 3′ long.

6. **V. encelioides,** Benth. Annual, canescent; stem erect; leaves ovate or oblong, coarsely serrate, the broadly winged petioles auriculate at the base; heads somewhat corymbose: achenia of the disk winged, 2-awned, of the rays wingless, 3-toothed. (Ximenesia, *Cav.*) — Middle and South Florida. Introduced. — Stem 2° – 3° high. Flowers yellow.

+- +- *Pappus and rays none.*

7. **V. Warei,** Gray. Stem wingless, simple, smooth below, naked and rough above; leaves opposite or alternate, lanceolate or elliptical, sessile, rigid, obtuse, strongly reticulate, strigose; heads solitary or 2 – 3 together, terminal; scales of the involucre in 2 rows, lanceolate, appressed; flowers orange-yellow; the marginal ones abortive; achenia oblong-obovate, narrowly winged, with a cup-shaped disk. — Low pine barrens near the coast, West Florida. June – July. — Stem 1° – 2° high. Leaves 2′ long. Heads dark brown.

59. ACTINOMERIS, Nutt.

Heads many-flowered; the ray flowers 4 – 14, neutral, or wanting. Scales of the involucre in 1 – 3 rows, leafy. Receptacle convex or conical, chaffy; the chaff embracing the outer edge of the laterally compressed obovate spreading mostly winged achenia. Pappus of two persistent awns. — Perennial herbs, with lanceolate serrate often decurrent leaves. Flowers yellow or white.

1. **A. squarrosa,** Nutt. Stem pubescent, winged above; leaves alternate or opposite, ovate-lanceolate, acuminate at each end; heads corymbose; scales of the involucre in 2 rows, linear-spatulate, spreading; achenia broadly obovate, winged; awns of the pappus rigid, spreading; rays 4 – 12, yellow. — River banks, Florida to North Carolina. Sept. — Stem 4° – 8° high. Lowest leaves 1° long.

2. **A. alba,** Torr. & Gray. Stem smooth, or pubescent and often slightly winged above; leaves alternate, lanceolate; heads loosely corymbose; scales of the involucre in a single row, lanceolate-subulate; achenia mostly broadly winged; awns of the pappus slender; flowers white; rays none. — Rich soil in the lower districts, Georgia and South Carolina, and westward, rare. Sept. — Stem 4° – 8° high. Leaves 5′ – 8′ long.

60. COREOPSIS, L. Tickseed.

Heads many-flowered; the ray flowers commonly 8, neutral, rarely wanting. Involucre double; each row of about 8 scales; the outer ones narrow and spreading; the inner membranaceous and appressed. Receptacle flat, chaffy. Chaff membranaceous, mostly deciduous with the achenia. Achenia compressed, often winged, not narrowed nor beaked at the apex, awnless, or with a pappus of two upwardly hispid or serrulate awns or scales. — Herbs. Leaves entire or pinnately divided. Heads solitary or corymbose. Disk dark purple or yellow. Rays yellow, rarely rose-color.

* *Rays none.*

1. **C. discoidea,** Torr. & Gray. Smooth; stem diffusely branched; leaves long-petioled, 3-parted, with ovate-lanceolate coarsely serrate divisions; the uppermost often simple; heads small, on short peduncles; exterior involucre foliaceous, longer than the heads; achenia narrowly wedge-shaped, hairy. — Swamps, North Carolina, and northward. July – Sept. — Stem 1° – 2° high.

* * *Rays entire, or emarginate at the apex, yellow.*

+ *Leaves petioled: achenia narrowly wedge-shaped, 2-toothed or awned: scales of the involucre equal, the outer ones separate.*

2. **C. aurea,** Ait. Stem smooth, much branched; leaves smooth or slightly pubescent, entire, or 3 – 7-parted; the divisions oblong or lanceolate, serrate, toothed or lobed, or all linear and entire; exterior scales of the involucre linear-spatulate; achenia smoothish, with two short triangular teeth. (C. mitis, *Michx.* C. arguta, *Pursh.*) — Swamps. August – Oct. — Stem 2° – 4° high. Leaves polymorphous; the uppermost commonly undivided. Rays showy.

3. **C. trichosperma,** Michx. Smooth; stem somewhat 4-angled, branching; leaves pinnately 5 – 7-parted; the divisions lanceolate or linear, sharply serrate or toothed; the upper ones 3 – 5-cleft; exterior scales of the involucre linear, obtuse; achenia hispid above, crowned with two triangular hispid teeth. — Swamps, South Carolina, and northward. Sept. — Stem 1° – 2° high. Achenia twice as large as in the preceding.

4. **C. aristosa,** Michx. Like the last, but more or less pubescent; achenia flat, obovate, the thin margins hispid; awns slender, spreading, about the length of the achenia — Low thickets, Mississippi, and westward. Sept.

+ + *Leaves petioled: achenia elliptical or obovate, emarginate, awnless: exterior scales of the involucre shorter than the interior.*

5. **C. tripteris,** L. Stem smooth, branching; leaves smooth, or rough above; rarely all entire, the middle ones 3- (rarely 5-) parted, with the divisions lanceolate and entire; exterior scales of the involucre 5 – 6, obtuse, united at the base; achenia elliptical, smooth, incurved, narrowly winged. — Woods and margins of fields. August - Sept. — Stem 3° - 6° high.

6. **C. latifolia,** Michx. Smooth or somewhat pubescent; stem tall; leaves undivided, ovate-oblong, acuminate, coarsely serrate, smooth above, paler beneath; heads small, corymbose; scales of the involucre 4 – 5 in each row; the exterior ones short, not united below; rays 4 – 5; achenia obovate-oblong, wingless. — High mountains of Georgia and North Carolina. August. — Lowest leaves 6′ long.

+ + + *Leaves sessile, 3-parted to the base, seemingly* 6 *in a whorl; the divisions entire or variously divided: scales of the involucre equal; the exterior linear-oblong, united below: achenia oblong, narrowly winged, truncate, or minutely 2-toothed at the apex.*

7. **C. senifolia,** Michx. Pubescent; stem 4 angled below, branching; divisions of the leaves oval-lanceolate, entire, the uppermost leaves often simple; disk yellow; achenia minutely 2-toothed. (C. stellata, *Nutt.*, a glabrous form, with broader thinner leaves. C. Æmleri, *Ell.*, with all the leaves entire.) — Dry sandy woods. August. — Stem 2° high. Leaves 1′ - 2′ long. Rays 6″ - 9″ long.

8. **C. delphinifolia,** Lam. Smooth or slightly pubescent; divisions of the leaves entire or 2 – 3- (the middle one sometimes 5-) parted, linear-lanceolate, rather rigid; disk brownish; achenia obovate-oblong, minutely 2-toothed. — Dry soil in the upper districts. August - Sept. — Stem 1° - 2° high.

9. **C. verticillata,** L. Smooth; stem branching, slender; divisions of the pinnately or bipinnately divided leaves linear or filiform; disk yellow; achenia minutely 2-toothed at the apex. — Low ground, in the upper districts. August. — Stem 1° - 3° high.

* * * *Rays* 3 – 5-*toothed or lobed.*

+ *Rays yellow: achenia orbicular, broadly winged, warty, and with a tubercle at each end on the inside, 2-toothed: scales of the involucre nearly equal: heads long-peduncled.*

10. **C. auriculata,** L. Stem short (4′ - 8′ high), smooth or sparsely villous, 1 – 2-forking; lower leaves ovate or roundish (1½′ - 2′ long), entire, or with 2 – 4 small lateral lobes, the others small and remote; heads few; achenia oblong, incurved, wingless, even, or obscurely papillose. — Woods in the upper districts. April – May.

11. **C. pubescens,** Ell. Stem tall (2° high), densely villous, at length much branched; lower leaves lanceolate or oblong (3′ - 4′ long), mostly 3-lobed, as long as the stout petiole, the uppermost entire; heads very numer-

ous; achenia broadly winged, circular, slightly 2-toothed, plainly papillose on both sides. — Mountains of Georgia and Carolina. May – Sept.

12. **C. grandiflora,** Nutt. Stem slender, smooth, ascending; leaves elongated; the lowest linear-spatulate, on long ciliate petioles; the upper ternately or 1 – 2-pinnately parted, the divisions linear; exterior scales of the involucre ovate-lanceolate; rays large, 4 – 5-toothed. — Dry soil, Florida, Georgia, and westward. April – June. — Stem 8′ – 12′ high.

13. **C. lanceolata,** L. Smoothish; stem short, ascending; leaves undivided, rarely 2 – 3 lobed, thick; the lowest spatulate-oblong on long ciliate petioles; the upper lanceolate, sessile; exterior scales of the involucre ovate-lanceolate; rays large, strongly 4 – 5-toothed. (C. crassifolia, *Ait.*, stem and leaves hairy or woolly.) — Dry soil, Florida to North Carolina. May – June. Stem 6′ – 12′ long.

+ + *Rays yellow: achenia nearly straight, oblong, 2-awned, the margins with a serrulate or pectinate wing (except No. 14): exterior scales of the involucre shorter than the interior: disk dark purple.*

14. **C. Leavenworthii,** Torr. & Gray. Smooth; stem dichotomous above; leaves opposite, linear, entire, or with two lateral lobes; rays 3-toothed; achenia with a broad whitish entire wing, conspicuously 2-toothed. — Coast of Florida, and westward. — Stem slender, 1° – 2° high. Lower leaves 3′ – 4′ long, 1″ wide. Rays 5″ – 6″ long.

15. **C. gladiata,** Walt. Smooth; stem terete, naked above, simple, or with few peduncle-like branches; leaves fleshy, alternate, entire, or rarely 3-lobed; the lowest ones spatulate-oblong, on long petioles; the upper small, linear; heads large; exterior scales of the involucre small and roundish; rays showy, 4-toothed; wings of the achenia pectinately toothed. — Low pine barrens. Sept. – Oct. — Stem 2° – 3° high. Lowest leaves 8′ – 10′ long. Rays wedge-shaped, 1′ long.

16. **C. angustifolia,** Ait. Smooth; stem slender, 4-angled, dichotomously branched above; leaves opposite or alternate, linear, obtuse, entire; the lowest ones spatulate-lanceolate; heads small, corymbose; rays 3 toothed; wings of the achenia pectinately toothed. — Pine barren swamps, in the lower districts. Sept. – Oct. — Stem 2° – 3° high. Leaves somewhat fleshy. Rays ½′ long.

17. **C. integrifolia,** Poir. Smooth; stem terete, corymbosely branched above; leaves opposite, petioled, entire, ovate or oblong, obtuse, the margins scarious and roughish; heads few, on long peduncles; exterior scales of the involucre oblong-linear; rays wedge-shaped, palmately 3-lobed; ovary wingless, with hispid margins. — River banks, South Carolina and Georgia. Sept. — Stem 2° – 3° high.

+ + *Rays purple or rose-color*

18. **C. nudata,** Nutt. Smooth; stem slender, forking above; leaves alternate, distant terete and rush-like; rays bright purple, 3-toothed; achenia with lacerated wings, 2-awned. — Pine barren ponds, Florida and Georgia, near the coast. April. — Stem 2° high. Lowest leaves 1° long. Rays 1′ long.

19. **C. rosea,** Nutt. Smooth; stem low, branching; leaves opposite, linear; heads small; rays slightly 3-toothed; achenia wingless, unawned. — Swamps, Georgia (*Nuttall*), and northward. July – August. — Stem 8′ – 12′ high. Rays rose-color.

61. COSMOS, Cav.

Scales of the involucre more or less united. Achenia terete or 4-angled, narrowed or beaked at the apex, and crowned with 2 – 4 downwardly barbed or hispid deciduous awns. Otherwise like Coreopsis. — Leaves opposite, pinnately divided. Disk yellow. Rays purplish.

1. **C. caudatus,** Kunth. Smooth; leaves bipinnately divided, with the divisions lanceolate and entire; achenia (1′ long) tapering into a very long rough beak, 2-awned; rays short, 3-cleft, rose-color. — Key West, Florida.

62. BIDENS, L. Beggar-ticks.

Chiefly like Coreopsis; but the exterior involucre often long and leaf-like; the achenia compressed, or 3 – 4-angled, (not narrowed at the apex,) and crowned with 2 – 4 persistent downwardly barbed or hispid awns. — Leaves serrate, or pinnately divided, opposite. Rays yellow or white, often wanting. Disk yellow.

* *Achenia flattened, narrowly wedge-shaped.*

1. **B. frondosa,** L. Stem tall, branched; leaves thin, long-petioled, pinnately 3 – 5-divided; the divisions ovate or ovate-lanceolate, acuminate, sharply serrate; heads discoid; exterior scales of the involucre large, leafy; achenia 2-awned. — Low ground. July – Sept. ① — Stem 2° – 5° high. Margins of the achenia upwardly ciliate.

2. **B. connata,** Muhl. Stem low, branched; leaves oblong-lanceolate, acuminate, coarsely serrate, tapering and connate at the base, the lowest often 3-parted; heads discoid; exterior involucre leafy; achenia 2 – 4-awned, with downwardly hispid margins. — Western districts of Georgia and westward, in damp soil. July – Sept. ① — Stem 1° – 2° high.

3 **B. cernua,** L. Stem simple or branched; leaves lanceolate, sharply serrate, clasping or connate at the base, 3′ – 5′ long; heads nodding; outer involucre leafy, usually 2 – 3 times longer than the inner one; rays short or none; achenia 4-awned. — Wet ground in the upper districts. July – Sept.

4. **B. chrysanthemoides,** Michx. Smooth; stem erect or ascending; leaves undivided, oblong-lanceolate, obscurely serrate, connate; heads radiate, showy; achenia 2 – 4-awned. — Wet places. Sept. – Oct. ① — Stem thick, 1° – 2° high.

* * *Achenia 3 – 4-angled, linear: heads radiate: scales of the involucre nearly equal.*

5 **B. leucantha,** Willd. Stem low, 4-angled; leaves pinnately divided; the divisions ovate or lanceolate, serrate; the lowest leaves undivided; outer scales of the involucre obtuse, spreading; the inner ones acute; rays 5, white; achenia 2 – 4-awned. — South Florida. Oct. – Dec. — Stem 10′ – 15′ high.

6. **B. bipinnata,** L. Stem tall, 4-angled, much branched; leaves bipinnate, the divisions small, ovate or lanceolate, acute; heads small; rays 2 – 3, yellow; achenia 3 – 4-awned. — Cultivated grounds, common. Aug. – Sept. ① — Stem 2° – 5° high.

63. BALDWINIA, Ell.

Heads many-flowered, globose in fruit; the ray flowers 20–30, neutral, 3-toothed at the apex; tube of the disk flowers dilated and indurated. Scales of the involucre short, fleshy, imbricated in about 4 rows. Receptacle deeply alveolate; the 5–6-angled cells with entire margins, enclosing the slender obconical hairy achenia. Pappus of 7–9 oblong nerveless chaffy scales, as long as the achenia. — An erect puberulent mostly simple perennial herb, with alternate fleshy entire linear or (the lowest) spatulate leaves, and a solitary head of yellow flowers on a long peduncle.

1. **B. uniflora,** Ell. — Low pine barrens, Florida to North Carolina, and westward. Sept. — Stem 2° – 3° high. Heads large. — Dr. Curtis finds a form with the disk flowers dark purple. The rays are also sometimes tubular.

64. ACTINOSPERMUM, Ell.

Scales of the involucre in about 2 rows, lanceolate, setaceously acuminate. Margins of the cells of the receptacle cuspidate-toothed. Achenia radiate at the summit. Pappus a row of 12 short roundish entire scales. Otherwise like Baldwinia. — A slender branching annual. Leaves alternate, linear, fleshy. Heads of yellow flowers showy, terminating the peduncle-like summit of the branches.

1. **A. angustifolium,** Torr. & Gray. (Baldwinia multiflora, *Nutt.*) — Dry sandy ridges in the pine barrens, Florida and Georgia. Sept. — Stem 1° – 2° high, smooth. Leaves very numerous, sprinkled with jointed hairs.

65. MARSHALLIA, Schreb.

Heads many-flowered; the flowers all tubular and perfect. Corolla pubescent, with linear spreading lobes. Scales of the involucre oblong-linear or lanceolate, in 1–2 rows. Chaff of the convex or conical receptacle narrow-linear, rigid. Achenia oblong, narrowed downward, 5-angled, mostly hairy. Pappus of 5–6 ovate or triangular acuminate entire membranaceous scales. — Perennial herbs, with simple and scape-like or branching stems, smooth entire 3-nerved alternate leaves, and a solitary head of white or purplish flowers terminating the stem or branches. Anthers blue.

1. **M. latifolia,** Pursh. Stem leafy, simple, or sparingly branched above; leaves ovate-lanceolate, acuminate; scales of the involucre acute; achenia smooth. — Dry soil, in the upper districts. May – June — Stem 1° high.

2. **M. lanceolata,** Pursh. Stem naked above, simple, pubescent; leaves lanceolate, obtuse; the lowest spatulate; scales of the involucre obtuse; achenia pubescent. — Var. PLATYPHYLLA, Curtis. Stem leafy to the middle; leaves longer and broader, the lowest long-petioled. — Dry open woods, Florida to North Carolina, and westward; the variety in the upper districts. April – June. — Stem 6′ – 12′ high. Leaves 2′ – 3′ long.

3. **M. angustifolia,** Pursh. Stem simple or branched, leafy below, puberulent above; leaves linear, acute, the lowest spatulate; scales of the

involucre, linear, acute; disk at length ovate or oblong; achenia with hairy angles. — Low pine barrens, Florida to North Carolina. July – August. — Stem 2° – 3° high.

66. HYMENOPAPPUS, L'Herit.

Heads many-flowered; the flowers all tubular and perfect. Scales of the involucre 6 – 12, oval or obovate, membranaceous, white. Receptacle naked. Corolla slender. Achenia top-shaped, 4-angled. Pappus of 12 – 20 short obtuse thin scales. — Hoary or woolly herbs, with alternate pinnately lobed or divided leaves. Heads corymbed. Flowers commonly white.

1. **H. scabiosæus,** L'Herit. Hoary-tomentose; stem corymbosely branched; leaves pinnatifid or the lowest bipinnatifid, with lanceolate or oblong divisions; scales of the involucre broadly obovate, longer than the disk; pappus minute. — Light dry soil, Florida to South Carolina, and westward. April – May. Stem 2° high.

67. POLYPTERIS, Nutt.

Heads many-flowered; the ray flowers pistillate, or none. Scales of the obconical involucre in 2 rows, membranaceous at the summit. Throat of the corolla shorter than the lobes. Receptacle flat, naked. Achenia slender, 4-angled, tapering at the base. Pappus of 6 – 12 membranaceous denticulate scales. — Herbs with narrow entire leaves, and heads of white or purple flowers in a terminal corymb.

1. **P. integrifolia,** Nutt. Stem (2° high) branched above, smoothish, leaves lanceolate, rough, the lower ones often opposite; rays none; flowers purplish; scales of the pappus 8 – 9, linear-subulate. — Dry pine barrens, Georgia and Florida. July – Sept.

68. PALAFOXIA, Lag.

Heads of the involucre discoid. Scales of the involucre wholly herbaceous, linear. Pappus of 4 – 8 scales. Throat of the corolla cylindrical, longer than the lobes. Otherwise like the preceding.

1. **P. Feayi,** Gray. Stem woody, slender, widely branched, rough with short rigid hairs; leaves ovate or lanceolate, opposite or alternate, short-petioled; corymbs loose; heads discoid; achenium sparsely hispid, several times longer than the obtuse denticulate scales of the pappus. — South Florida. Stem 3° – 5° high.

69. FLAVERIA, Juss.

Heads few-flowered, discoid, or with a single pistillate ray. Involucre of 3 – 5 oblong nearly equal scales. Receptacle naked. Achenia oblong or club-shaped, smooth, striate. Pappus none. — Tropical herbs, with opposite leaves, and densely clustered heads of yellow flowers.

1. **F. linearis,** Lagasca. Stem erect, or prostrate at the base, branched above, smoothish; leaves fleshy, linear, or linear-lanceolate, connate, entire; corymb dense; scales of the involucre mostly 5; ray often wanting. — Coast and Keys of South Florida. — Stem 1° – 2° high.

70. GAILLARDIA, Foug.

Heads many-flowered; the rays neutral, deciduous. Scales of the involucre in 3 rows, spreading above. Receptacle convex, naked or fimbrillate. Rays wedge-shaped, palmately 3-lobed. Corolla of the disk with subulate lobes. Achenia top-shaped, hairy. Pappus of 6 – 10 membranaceous 1-nerved awned scales. — Pubescent branching herbs, with alternate leaves, and solitary heads of yellow or purple flowers terminating the branches.

1. **G. lanceolata,** Michx. Stem (1° – 2°) with long and slender branches; leaves narrow-lanceolate, mostly entire, sessile, the lowest narrowed at the base; rays yellow, sometimes wanting; disk flowers purple; receptacle naked; scales of the pappus 7 – 9. — Dry pine barrens, Florida to South Carolina. July – Sept.

71. HELENIUM, L.

Heads many-flowered, radiate; the rays wedge-shaped, 3 – 5-cleft. Scales of the involucre in 2 rows; the outer ones spreading, the inner fewer and chaffy. Receptacle naked, convex, globose, or oblong. Corolla of the disk 4 – 5-toothed. Achenia top-shaped, furrowed, hairy. Pappus of 5 – 8 membranaceous pointed or awned scales. — Erect herbs, with the stem often winged by the alternate decurrent leaves. Heads terminal. Flowers mostly yellow.

§ 1. *Rays pistillate: stems branching; heads few or many.*

1. **H. autumnale,** L. Perennial, smooth or minutely pubescent; leaves lanceolate or oblong, serrate, strongly decurrent; scales of the involucre linear-subulate; scales of the pappus ovate-lanceolate, denticulate, awn-pointed; rays fertile, 3 – 5-cleft, longer than the disk. — Damp soil. Aug. – Sept. — Stem 2° – 4° high. Achenia hairy.

2. **H. parviflorum,** Nutt. Perennial, smooth; leaves lanceolate or oblong-lanceolate, sparingly serrulate, scarcely decurrent; scales of the involucre filiform; rays sterile, 3-cleft, narrow; achenia smooth; pappus awned. Georgia, *Nuttall.* — Heads smaller than the last, globose.

3. **H. tenuifolium,** Nutt. Annual, smooth; stem slender, very leafy; leaves narrow-linear, entire; heads globose, on long and slender peduncles; scales of the involucre subulate; scales of the pappus ovate, entire, abruptly awned; achenia villous. — Road-sides and waste ground. Sept. — Stem 1° – 2° high. Branches erect.

4. **H. quadridentatum,** Labill. Annual, smoothish; lowest leaves oblong, pinnatifid; the upper ones lanceolate, entire; rays shorter than the oblong disk; scales of the pappus roundish, obtuse. — River banks and damp soil, North Carolina, and westward. — Stem much branched, 1° – 3° high.

5. **H. nudiflorum,** Nutt. Perennial, stem pubescent; leaves lanceolate, entire or nearly so, decurrent; heads globose, dark purple; scales of the pappus ovate, slightly denticulate, abruptly awn-pointed; achenia hairy on the angles. — River banks, Florida to North Carolina. May – June. — Stem 1° – 2° high.

§ 2. *Rays neutral: stems mostly simple: heads solitary: perennials.* — LEPTOPODA.

6. **H. Nuttallii,** Gray. Smooth or nearly so; leaves entire or obscurely serrate, lanceolate or linear, the lower ones decurrent, the lowest tapering into a petiole; rays 20 – 30 in a single row; scales of the pappus lacerate, and mostly bristle-pointed; achenia smooth. — Margins of pine barren ponds, Florida to South Carolina, and westward. April – May. — Stem 1° – 2° high.

7. **H. fimbriatum,** Gray. Stem smooth, sometimes branching, the peduncle slightly pubescent; leaves linear-lanceolate, acute, entire or obscurely serrate, decurrent; scales of the pappus fimbriate. — Low pine barrens, Florida, and westward. April – May. — Stem 1° – 2° high.

8. **H. vernale,** Walt. Closely pubescent; leaves somewhat fleshy, linear-lanceolate, sessile but not decurrent, denticulate; the lowest spatulate-lanceolate, toothed or pinnatifid; scales of the pappus obtuse, with slightly lacerated margins. — Wet pine barrens, Florida to North Carolina, and westward. April – May. — Stem 2° high.

9. **H. brevifolium,** Gray. Stem pubescent above, often sparingly branched; leaves entire, more or less decurrent, the upper ones lanceolate, the lowest spatulate-oblong, obtuse; scales of the pappus obtuse, slightly lacerate at the apex. — Wet places, Alabama to North Carolina. May – June. — Stem 1° – 3° high. Heads large.

10. **H. Curtisii,** Gray. Glabrous; stem often branching; leaves lanceolate, entire, decurrent; scales of the pappus obovate, nearly entire; achenia hairy on the angles. — Raleigh, North Carolina (*Curtis*). — Stem 2° – 3° high. Leaves 3′ – 4′ long.

72. DYSODIA, Cav.

Heads many-flowered, the rays pistillate. Involucre bracted, the scales partly united in a single row. Receptacle flat, naked. Achenia 4-angled. Pappus of chaffy finely divided scales. — Branching odorous annuals, with pinnately divided leaves, and yellow flowers.

1. **D. chrysanthemoides,** Lag. Stem 1° high; leaves opposite with very narrow toothed lobes; rays few and short; pappus bristly. — Waste ground, Tennessee, and westward.

73. PECTIS, L.

Heads several-flowered, radiate. Rays pistillate. Disk flowers somewhat 2-lipped, perfect. Involucre cylindrical. Scales 5 – 8, in a single row. Receptacle naked. — Branches of the style short, obtuse. Achenium linear. Pappus composed of about five unequal bristle-pointed scales. — Chiefly annuals. Leaves opposite, glandular-dotted, bristly on the margins. Flowers small, yellow.

1. **P. linifolia,** Less. Stem diffusely branched (6′ – 12′ high); leaves linear, connate; heads small, on long and slender bracted peduncles; scales of the involucre slightly produced at the base; achenia hairy. — South Florida. Oct.

2. **P. ciliaris,** L. Stem erect, smooth; leaves linear, bristly-fringed below the middle; heads nearly sessile; rays 3; pappus of the disk flowers of 5 lanceolate acuminate scales, of the rays only 3. — Keys of Caximbas Bay, South Florida. Oct. — Stem 6′–12′ high.

74. ANTHEMIS, L. MAY-WEED.

Heads many-flowered, the rays pistillate or neutral. Scales of the hemispherical involucre imbricated in few rows, shorter than the disk. Receptacle conical, chaffy throughout, or only at the summit. Achenia obovoid, ribbed, smooth. Pappus none. — Branching annuals. Leaves alternate, thrice pinnately divided. Heads solitary, terminal. Rays white.

1. **A. Cotula,** L. Stem 1° high; divisions of the leaves linear; scales of the involucre with scarious margins; disk yellow. — Waste places. Introduced. May – June.

75. ACHILLEA, L. YARROW.

Heads many-flowered; the rays pistillate, few and short. Scales of the involucre imbricated. Receptacle flat or elongated, chaffy. Achenia oblong, compressed, margined. Pappus none. — Perennial herbs. Leaves alternate, commonly pinnately divided. Heads small, corymbose.

1. **A. Millefolium,** L. Stems (1° high) simple, pubescent, tufted; leaves lanceolate, bipinnatifid, the divisions linear, 3 – 5-cleft; corymbs dense, compound; rays 4 – 5, white. — Old fields and around dwellings. Introduced. May – Sept.

76. CHRYSANTHEMUM, Tourn. OX-EYE DAISY.

Heads many-flowered; the rays numerous, pistillate. Scales of the involucre imbricated, broad, rounded, with scarious margins. Receptacle flat or convex, naked. Achenia nearly terete. Pappus none. — Perennial herbs. Leaves alternate, toothed or pinnatifid. Heads solitary, terminating the stem or branches. Rays white.

1. **C. Leucanthemum,** L. Stem (6′ – 12′ high) simple, naked above; leaves pinnatifid; the lowest spatulate-obovate; the upper lanceolate; heads showy. — Fields. Introduced. May – June.

77. TANACETUM, L. TANSY.

Heads many-flowered, discoid; the flowers all fertile; the marginal ones chiefly pistillate, 3 – 5-toothed. Scales of the involucre imbricated, dry. Receptacle convex, naked. Achenia angled or ribbed. Pappus a narrow border, or none. — Herbs with alternate dissected leaves, and solitary or corymbose heads of yellow flowers.

1. **T. vulgare,** L. Stem smooth, erect; leaves bipinnately divided, the lobes serrate; heads corymbose, numerous; pappus 5-lobed. — Common in gardens, and sparingly naturalized in North Carolina. ♃ — Stem 1° - 2° high.

78. ARTEMISIA, L. WORMWOOD.

Heads few- or many-flowered, discoid; the central flowers perfect, 5-toothed (sometimes abortive), the marginal ones pistillate, 3 toothed. Scales of the involucre imbricated, mostly with scarious margins. Receptacle convex, naked or villous. Achenia obovoid. Pappus none. — Aromatic herbs or shrubs. Leaves alternate, pinnately divided. Heads small, in panicled spikes or racemes.

1. **A. caudata,** Michx. Smooth; stem slender, branching; lowest leaves 2 – 3-pinnately divided, the upper ones pinnate, with the divisions filiform; heads globular, in small racemes, forming an elongated panicle. — Dry open woods, West Florida, and northward. Sept. ② — Stem 2° – 6° high. Receptacle naked. Disk flowers abortive.

2. **A. vulgaris,** L. (MUGWORT) Stem branching; leaves white-downy beneath, pinnatifid, with the lobes lanceolate; heads downy, in slender terminal spicate panicles; flowers all perfect. — Waste grounds. Introduced.

3. **A. biennis,** Willd. Biennial, smooth; stem simple (1° – 3° high); leaves 1 – 2-pinnatifid, the linear lobes sharply toothed; heads crowded in terminal and axillary spikes, which form a long narrow leafy panicle; flowers all perfect. — West Tennessee.

4. **A. annua,** L. Annual, glabrous; stem 2° – 3° high, paniculately branched; leaves bipinnately divided, the lobes incised; panicles spreading; heads nodding. — Tennessee. Introduced.

79. SOLIVA, Ruiz & Pavon.

Heads many-flowered, monœcious; the fertile flowers in several rows, apetalous or nearly so; the staminate few in the centre, with a 3 – 6-toothed corolla. Scales of the involucre 5 – 10, in a single row. Receptacle flat, naked. Achenia compressed, with winged or thickened margins, armed with the persistent rigid style. Pappus none. — Small depressed herbs, with petioled pinnately divided leaves, and small sessile or rarely pedunculate heads.

1. **S. nasturtiifolia,** DC. Very low and depressed; leaves on short petioles, pinnately parted; the lobes 3 – 4 on each side, obtuse, entire; heads sessile; achenia cuneiform, villous at the apex; the callous margin tuberculate-rugose throughout. — South Carolina, around Charleston. Introduced. Feb. – May.

80. ARNICA, L.

Heads many-flowered, radiate; the rays pistillate. Scales of the campanulate involucre lanceolate, equal, in about two rows. Receptacle flat, hairy. Achenia terete, narrowed downward, somewhat ribbed. Pappus a single row of rough bristly hairs. — Perennial herbs. Leaves opposite, undivided. Heads single or corymbose.

1. **A. nudicaulis,** Nutt. Hirsute; radical leaves spreading, oval or obovate, obtuse, 3 – 5-ribbed, serrate or entire; the others (2 – 3 pairs) distant, oblong, sessile; heads corymbose, showy; achenia smoothish. — Wet pine barrens, Florida, and northward. April – May. — Stem 1° – 2° high, simple, or with few opposite branches.

81. SENECIO, L. Groundsel, Butter-weed.

Heads many-flowered; the flowers all tubular and perfect, or with pistillate rays. Scales of the involucre in a single row, often bracted. Receptacle naked or alveolate. Achenia not beaked nor winged. Pappus of copious soft hairs. — Herbs, with entire or pinnately divided leaves. Heads corymbose. Flowers yellow. Pubescence mostly webby and deciduous.

* *Annual: heads radiate.*

1. **S. lobatus,** Pers. Smooth; stem furrowed, hollow; leaves tender, lyrate-pinnatifid, with rounded toothed lobes; the earliest orbicular, long-petioled; rays about 12. — River bottoms. March – April. — Stem 1° – 3° high. Lobing of the leaves variable.

* * *Perennial: heads radiate: lowest leaves petioled, undivided; the others pinnately lobed or toothed; the uppermost sessile.*

2. **S. aureus,** L. Smooth, or more or less woolly when young; stem (2° high) slender; radical leaves long-petioled, round-cordate, crenate; the others lanceolate or oblong-lanceolate, pinnatifid; rays 8 – 12; achenia smooth. — Mountains of North Carolina. July.

Var. **obovatus,** Torr. & Gray. Smoothish; leaves chiefly radical, thick, obovate or roundish, crenate, on short winged petioles; those of the stem small, pinnatifid; heads crowded; rays 9 – 12; achenia smooth. — Rocky places, West Florida to North Carolina. April – May. — Stem 1° high. Radical leaves 2′ – 3′ wide.

Var. **Balsamitæ,** Torr. & Gray. Radical leaves spatulate-lanceolate or obovate; lower part of the stem often densely woolly; achenia hairy. — Dry open woods in the upper districts. May – June.

3. **S. tomentosus,** Michx. Woolly and hoary throughout; the leaves becoming smoothish; lowest leaves oblong, crenate, obtuse; stem leaves few, scattered, lanceolate, acute, serrate or toothed; rays 12 – 15; achenia hairy. — Damp soil, Florida to North Carolina. April – May. — Stems mostly simple, 2° – 3° high. Heads rather large.

* * * *Perennial: heads radiate: leaves all bipinnately dissected.*

4. **S. Millefolium,** Torr. & Gray. Woolly when young, at length nearly smooth; stems tufted, corymbose above; leaves lanceolate, with the divisions linear and toothed, the lowest ones petioled; heads crowded; rays 9 – 12. — Mountains of North Carolina (*Buckley*). June. — Stems 1° – 2° high.

* * * * *Perennial: heads large, discoid: leaves all entire.*

5. **S. Rugelia,** Gray. Minutely pubescent; rhizoma creeping; stem simple, erect; leaves ovate, acute at each end, denticulate; the lowest large (2′ – 4′), crowded, on long margined petioles, the others small, scattered, and nearly sessile; heads on long bracted peduncles. — Smoky Mountains, Tennessee (*Rugel, Buckley*). — Stem 1° high.

82. ERECHTHITES. Raf. Fireweed.

Heads many-flowered, discoid; the marginal flowers pistillate, very slender, 2 – 3-toothed; the others perfect, 4 – 5-toothed. Scales of the cylindrical involucre in a single row, linear, acute, bracted. Receptacle naked. Achenia oblong, striate. Pappus of copious soft hairs. — Erect annual herbs, with alternate simple leaves, and corymbose heads of greenish flowers.

1. **E. hieracifolia,** Raf. Stem mostly branched, smooth or hairy; leaves lanceolate, sessile, sharply serrate or toothed; the upper somewhat clasping; bracts subulate, minute; pappus white. — Rich soil, common. July - Sept. — Stem 1° - 5° high.

83. CACALIA, L.

Heads 5 - many-flowered; the flowers all tubular and perfect, 5-cleft. Scales of the involucre 5 - 30, in a single row. Receptacle flat, naked, or with a tubercular prominence in the centre. Achenia oblong, smooth. Pappus of numerous capillary bristles. — Perennial, mostly smooth and tall herbs, with alternate entire or lobed leaves, and corymbose heads of white flowers.

* *Receptacle flat: involucre about 12-leaved, 25 - 30-flowered.*

1. **C. suaveolens,** L. Smooth; leaves ovate, hastate, acute, toothed-serrate, on winged petioles; the uppermost sessile; bracts filiform. — Low ground, West Florida, and northward. Sept. - Oct. — Stem 3° - 5° high.

* * *Receptacle tubercular in the centre: scales of the involucre and flowers* 5.

2. **C. reniformis,** Muhl. Stem angled; leaves not glaucous, angularly toothed, on slender petioles; the lowest large, reniform, the upper ones roundish; corymb compound. — Damp soil in the mountains of North Carolina and Tennessee. July - August. — Stem 4° - 9° high. Radical leaves sometimes 2° in diameter, the teeth mucronate.

3. **C. atriplicifolia,** L. Stem terete, corymbosely branched above; leaves glaucous beneath, angularly lobed, the lobes mostly entire, mucronate; the lowest ones reniform; the upper rhomboid; corymbs compound. — Woods and moist banks, Florida, and northward. August - Sept. — Stem 4° - 8° high. Leaves smaller and thicker than the last.

4. **C. diversifolia,** Torr. & Gray. Stem angled; leaves not glaucous, petioled; the lowest broadly cordate or cordate-ovate, obtusely toothed, the upper 3 - 5-lobed. — Muddy banks of the Chipola River, Marianna, West Florida. May - August. — Stem 2° - 3° high.

5. **C. ovata,** Walt. Stem terete; leaves glaucous beneath, 3 - 5 nerved, ovate or oval, obtuse, entire or wavy-toothed; the lowest long-petioled; the upper ones sessile; corymbs open. — Swamps, Georgia, Florida, and westward. July - August. — Stem 3° - 4° high. Lowest leaves 5′ - 8′ long.

6. **C. tuberosa,** Nutt. Stem angled; leaves not glaucous, oval or lanceolate-oblong, strongly 5 - 7-nerved, entire or slightly toothed; the lowest long-petioled; corymbs dense. — Swamps, Alabama, and westward. August - Sept. — Stem 3° - 5° high. Leaves thick.

7. **C. Floridana,** Gray. Stem stout, furrowed, 2° - 4° high; leaves oval, strongly nerved, dentate-serrate, the lower long-petioled; lobes of the corolla as long as the throat. — Dry sandy barrens, East Florida. Sept.

8. **C. lanceolata,** Nutt. Stem terete; leaves rather fleshy, lanceolate or linear-lanceolate, entire or coarsely toothed, 3-nerved, somewhat glaucous;

the lowest tapering into a long petiole, the upper sessile. — Marshes, Georgia, Florida, and westward. Aug. - Sept. — Stem 3° - 5° high. Lowest leaves 1° or more long.

TRIBE V. CYNAREÆ. *Heads discoid; the flowers all tubular; the exterior ones sometimes enlarged and ray-like: style thickened at the summit; the stigmatic lines extending to the summit of the branches, without appendages.*

84. CNICUS, Tourn. THISTLE.

Heads many-flowered, discoid; the flowers all similar and perfect. Scales of the involucre imbricated in many rows, all but the innermost ones usually spine-pointed. Receptacle bristly. Achenia oblong, compressed, smooth. Pappus of numerous plumose hairs. — Herbs, with alternate sessile or decurrent mostly pinnatifid and spiny leaves. Heads large, subglobose. Flowers purple or whitish.

* *Leaves decurrent.*

1. **C. lanceolatus,** Hoffm. Stem hairy, branched; leaves pinnatifid, spiny, hirsute above, woolly beneath; scales of the involucre webby, tipped with strong erect spines; flowers purple. — Waste ground in the upper districts. Introduced. Sept. ② — Stem 2° - 3° high.

* * *Leaves sessile.*

+ *Scales of the involucre tipped with spreading spines.*

2. **C. altissimus,** Willd. Stem tall, pubescent; the branches leafy to the summit; leaves rough-pubescent above, hoary-tomentose beneath, fringed with fine prickles; the lowest petioled, pinnatifid; the upper sessile, entire or pinnately lobed; heads bracted; scales of the involucre webby when young, tipped with a weak prickle; flowers purple. — Fields and thickets. August - Sept. — Stem 3° - 10° high. Heads about 1′ in diameter. Involucre somewhat viscid.

Var. **discolor,** Gray. Leaves nearly all deeply pinnatifid, the divisions narrow, 2 - 3-lobed, spine-pointed, and fringed along the margins. — With the preceding.

3. **C. Nuttallii,** Gray. Stem angled, paniculately branched, smooth or hairy; the branches naked at the summit; leaves clasping, soft-hairy, becoming smoothish above, pinnatifid; the numerous spreading lobes lanceolate, 3-toothed, tipped with strong spines, and ciliate on the margins; heads numerous, small, bractless; scales of the involucre appressed, viscid, tipped with a short, at length spreading prickle; corolla white or pale purple. — Dry light soil, Florida to South Carolina. July - August.. — Stem 3° - 8° high. Heads 8″ - 10″ in diameter.

4. **C. Virginianus,** Pursh. Stem slender, simple or sparingly branched, hoary-tomentose; leaves linear, or linear-lanceolate, rigid, smooth above, hoary beneath; the margins revolute, toothed or pinnatifid, and spiny; scales of the involucre viscid, spiny; flowers purple. — Pine barren swamps, Florida, and northward. August - Sept. — Stem 2° - 3° high. Heads $\frac{1}{2}$′ in diameter.

+ + *Scales of the involucre spineless, or the outer ones spine-pointed.*

5. **C. muticus,** Pursh. Stem tall, branching, commonly hairy; leaves with scattered hairs above, pubescent or at length nearly smooth beneath,

bristly ciliate on the margins, deeply pinnatifid; the lobes lanceolate, 2-3-toothed, spiny; scales of the involucre unarmed, webby, viscid; flowers purple. — Swamps in the upper districts. August-Sept. — Stem 3°-8° high. Heads 1′ in diameter,

6. **C. Lecontei,** Gray. Stem simple, or with 1-3 nearly naked branches hoary-tomentose; leaves lanceolate, smooth above, hoary beneath, entire, the margins fringed with bristly hairs, and spiny; the earliest ones pinnatifid; scales of the involucre cuspidate, viscid, not webby; flowers purple. — Pine barren swamps, Florida, Georgia, and westward. July-August. — Stem 2°-3° high, rigid. Heads 1′ in diameter.

7. **C. repandus,** Ell. Webby throughout when young; stem simple, very leafy; leaves oblong-linear, clasping, the margins undulate and closely fringed with bristly spines; heads mostly solitary; flowers purple. — Dry pine barrens, Florida to North Carolina. June-July. Stem 1°-2° high.

8. **C. horridulus,** Pursh. Webby when young, at length smoothish; stem thick, branching; leaves clasping, pinnatifid, armed with long and stout spines; heads large, surrounded by a whorl of linear pectinate spiny bracts; scales of the involucre linear-subulate, spine-pointed; flowers purple or yellowish. — Sandy soil, Florida, and northward. April-May. — Stem 1°-3° high, often purple.

85. ARCTIUM, L. Burdock.

Heads many-flowered, discoid; the flowers all perfect and similar. Scales of the globose involucre imbricated, coriaceous, with subulate spreading hooked tips. Receptacle flat, bristly. Achenia oblong, compressed, transversely rugose. Pappus of numerous short caducous bristles. Anthers caudate at the base. — Biennial branching herbs, with large cordate petioled leaves. Heads small. Flowers purple or white.

1. **A. Lappa,** L. Leaves undulate on the margins, pubescent beneath; the uppermost ovate; heads corymbose; involucre smooth or webby. — Waste places, North Carolina. Introduced from Europe.

86. CENTAUREA, L. Star Thistle.

Heads many-flowered; the marginal flowers mostly large and sterile. Scales of the involucre imbricated. Receptacle bristly. Achenia compressed. Pappus of rough bristles in one or more rows, sometimes wanting. — Herbs. Leaves alternate. Heads solitary.

1. **C. Calcitrapa,** L. Stem diffusely branched, hairy; leaves pinnately lobed; the lobes linear, toothed; heads sessile; involucre spiny; pappus none. — North Carolina. Naturalized. — Flowers purple.

2. **C. solstitialis,** L. Stem branching, woolly; lowest leaves pinnatifid, the upper sessile, entire; heads small, ovate, glabrous; involucre spiny; pappus double. — Coast of North Carolina. Introduced.

3. **C. Benedicta,** L. Stem low, spreading, villous; leaves oblong, clasping, toothed, prickly; heads ovoid, sessile, bracted; spines of the involucre pectinate; flowers yellow; achenia 10-toothed; pappus double. — Waste ground. Introduced.

SUBORDER II. LABIATIFLORÆ.

TRIBE VI. MUTISIACEÆ. *Heads with the flowers dissimilar or rarely diœcious; the marginal ones pistillate or neutral, ligulate or bilabiate: style as in Tribe* V.

87. CHAPTALIA, Vent.

Heads many-flowered, radiate. Ray flowers pistillate, in two rows, the outer ones ligulate, the inner ones ligulate or 3 – 5-toothed and filiform. Disk flowers perfect but sterile, bilabiate, the outer lip 3-cleft, the inner 2-cleft. Anthers caudate. Scales of the cylindrical involucre lanceolate, acute, imbricated in few rows. Receptacle naked Fertile achenia oblong, smooth, narrowed at each end. Pappus of numerous bristly hairs. — Stemless perennial herbs; the simple scape bearing a single head of white or purplish flowers. Leaves smooth above, white tomentose beneath.

1. **C. tomentosa,** Vent. — Low pine barrens, Florida to North Carolina. Feb. – April. — Scape tomentose, 6′ – 12′ high. Leaves spatulate-lanceolate or oblong. Heads nodding.

SUBORDER III. LIGULIFLORÆ.

TRIBE VII. CICHORACEÆ. *Style cylindrical above and pubescent, like the rather obtuse branches; the stigmatic lines terminating below or near the middle of the branches. — Plants with milky juice: leaves alternate.*

88. APOGON, Ell.

Heads 10 – 20-flowered. Scales of the involucre mostly 8, somewhat in two rows, nearly as long as the corolla, connivent in fruit. Receptacle naked. Achenia ovoid-oblong, terete, ribbed and transversely striate, smooth. Pappus none. — A low smooth and branching annual, with lanceolate entire or toothed leaves, and single or umbellate heads of yellow flowers, borne on slender peduncles.

1. **A. humilis,** Ell. — Florida to South Carolina, April – May. — Stem leaves clasping; the uppermost mostly opposite. — Plant 6′ – 12′ high.

89. KRIGIA, Schreb.

Heads many-flowered. Scales of the involucre 6 – 15. Achenia short, oblong or top-shaped, obscurely 4-angled, not beaked. Pappus double; the outer of very small chaffy scales; the inner of bristles. — Perennial or annual nearly smooth herbs, bearing single or umbellate heads of yellow flowers on long peduncles or scapes. Leaves alternate, entire or pinnatified.

§ 1. *Annual, nearly stemless: scales and bristles of the pappus* 5: *achenia top-shaped.* — KRIGIA proper.

1. **K. Virginica,** Willd. Proper stem short, simple or forking; scapes at length several, slightly pubescent, elongated in fruit; leaves somewhat glaucous; the lowest rounded, entire; the others spatulate-oblong, pinnatifid. — Dry sandy soil. March – May. — Scapes at length 1° high.

§ 2. *Perennial, stemless or caulescent: scales and bristles of the pappus numerous: achenia cylindrical.* — CYNTHIA.

2. **K. amplexicaulis,** Nutt. Root fibrous; stem branched above, bearing 3 – 5 heads on slender umbellate peduncles; radical leaves oval or spatulate-oblong, toothed or pinnatifid; the upper clasping and entire; achenia oblong. — Sandy soil in the upper districts. May – July. — Stem 1° – 2° high.

3. **K. montana,** Nutt. Stem short (2′ – 5′ high), from a short rootstock; peduncles single, axillary and terminal, 6′ – 8′ long; leaves clasping, the lower pinnatifid, the upper linear, entire. — Mountains of North Carolina. August.

4. **K. Dandelion,** Nutt. Stem short or none; root fibrous, bearing one or more globular tubers; leaves lanceolate and entire, or broader and pinnatifid; peduncles two or more, 6′ – 12′ long. — Damp rich soil, in the upper districts. April.

90. CICHORIUM, Tourn. CHICCORY.

Heads many-flowered. Involucre double, the exterior spreading. Achenia striate, compressed. Pappus of numerous chaffy scales in 1 – 2 rows. — Herbs. Leaves toothed or pinnatifid. Heads sessile. Flowers blue.

1. **C. Intybus,** L. Stem rigid, erect; leaves oblong, toothed, the lower pinnatifid. — Waste ground. Introduced.

91. HIERACIUM, Tourn.

Heads many-flowered. Scales of the involucre imbricated, or in 2 rows; the outer row short. Receptacle nearly naked. Achenia not beaked, commonly terete or spindle-shaped, ribbed. Pappus a single row of persistent brownish white hairs. — Perennial herbs with alternate entire or toothed leaves, and single, corymbose, or panicled heads of yellow flowers. — Involucre, in our species, in 2 rows, the outer short and bract-like.

1. **H. scabrum,** Michx. Stem stout, leafy, hirsute below, rough above; panicle somewhat corymbose; leaves oval, sessile; the lowest spatulate-oblong, hirsute; peduncles and involucre tomentose and glandular-hispid; achenia cylindrical. — Open woods in the upper districts. August – Sept — Stem 1° – 3° high. Heads large, many-flowered.

2. **H. Gronovii,** L. Stem leafy and hirsute below, naked and smoother above; leaves entire or denticulate, hirsute; the lowest spatulate-oblong; the upper small, sessile; panicle narrow, elongated; achenia narrowed upward. — Dry sandy soil. Sept. – Oct. — Stem 1° – 2° high. Lowest leaves spreading on the ground.

3. **H. venosum,** L. Stem slender, nearly leafless, smooth; lowest leaves oblong-obovate, smooth, or hirsute on the veins beneath, often veined with purple; the others (1 – 3) small and remote; heads small, in a spreading corymbose panicle, smoothish; achenia linear. — Shady soil in the upper districts. May – July. — Stem 1° – 2° high.

4. **H. paniculatum,** L. Stem slender, leafy, villous below; leaves thin, lanceolate, denticulate, acute, smooth; panicle divaricate; heads small, 12 – 20-

flowered; involucre smooth; achenia short, not narrowed upward. — Open woods along the mountains, Georgia, and northward. August – Sept. — Stem 2° – 3° high. Peduncles filiform.

5. **H. Marianum,** Willd. Stem leafy, 2° – 3° high; leaves oblong, hirsute beneath, the lowest tapering into the densely hirsute petiole, the upper distant, sessile; heads small, corymbose; involucre glandular-hispid; achenia slender, cylindrical. — Mountains of Georgia, and northward. July.

92. PRENANTHES, Vaill.

Heads 5 – 20-flowered. Involucre cylindrical, composed of 5 – 14 linear scales, and several short exterior ones. Receptacle naked. Achenia linear-oblong or cylindrical, furrowed, glabrous, not narrowed upward. Pappus of numerous straw-colored or brownish bristly hairs. — Perennial herbs, with bitter tuberous roots, entire or variously lobed leaves, and mostly nodding heads of yellowish white or purplish flowers, in short racemes or clusters.

1. **P. crepidinea,** Michx. Smoothish; stem tall, corymbosely panicled; leaves oblong-ovate or somewhat hastate, acute, unequally toothed, the lowest on winged petioles; involucre brown, hairy, of 12 – 14 scales, 20 – 35-flowered; pappus light brown. — Mountains of North Carolina and Tennessee. Sept. — Stem 5° – 8° high. Lower leaves 8′ – 12′ long. Flowers yellowish white.

2. **P. alba,** L. Smooth; stem paniculate, purplish; leaves acutish, angled, toothed, or variously 3 – 5-lobed or parted; the lowest petioled; the uppermost nearly sessile; racemes short, spreading; involucre purplish, of about 8 scales, 8 – 12-flowered; pappus light brown; flowers white or cream-color. — Open woods in the upper districts of Georgia, and northward. Sept. — Stem 3° – 4° high.

3. **P. altissima,** L. Smooth; stem simple or sparingly branched above; leaves thin, ovate or cordate, petioled, acuminate, denticulate, or the lower ones palmately 3 – 5-cleft or parted; heads in small axillary and terminal clusters, forming a long panicle; involucre slender, greenish, of about 5 scales, 5 – 6-flowered; pappus dirty white or straw-colored. — Varies with the wavy-toothed leaves, deltoid; the lowest hastate - 3-angled or parted. — Woods along the mountains, Georgia, and northward. Sept. — Stem 3° – 5° high. Flowers yellowish, or greenish white.

4. **P. serpentaria,** Pursh. Smooth or slightly pubescent; stem corymbosely panicled above; leaves deltoid, mucronate, pinnately 3 – 7-lobed, on winged petioles; the upper lanceolate, often entire; clusters small, terminal; involucre greenish, smooth or hairy, of about 8 scales, 8 – 12-flowered; pappus straw-color. — Varies with the lanceolate or oblong leaves mostly sessile, or the uppermost clasping; the 12 – 15-flowered involucre hirsute with long purplish hairs. — Dry sterile soil, Florida, and northward. Sept. — Stem 1° – 4° high.

5. **P. virgata,** Michx. Smooth; stem simple, virgate; leaves lanceolate, acute, sessile or partly clasping; the uppermost small, entire; the lowest deeply pinnatifid, on margined petioles; clusters of heads small, racemose; involucre smooth, purplish, of about 8 scales, 8 – 12-flowered; pappus straw-

color. — Damp soil, Florida, and northward. Sept. — Stem 2° - 4° high. Flowers purplish.

6. **P. aspera,** Michx. Rough-pubescent; stem simple; leaves oval-oblong, sharply toothed; heads erect, clustered, forming a compound villous terminal raceme; involucre of 8 or 9 hirsute scales, 12 - 14-flowered; pappus straw-color. — Barrens of Tennessee, and northward. — Stem 2° - 4° high. Leaves small. Flowers cream-color.

93. LYGODESMIA, Don.

Heads 5 - 10-flowered. Involucre elongated, cylindrical, of 5 - 8 linear scales, and a few short exterior ones. Receptacle naked. Achenia linear, elongated, smooth, striate, not narrowed upward. Pappus of copious smoothish white hairs in several rows. — Perennial smooth herbs, with linear or filiform leaves. Heads solitary. Flowers rose-color.

1. **L. aphylla,** DC. Stem simple or forking; lowest leaves filiform, elongated; the others remote, small, and bract-like; heads showy. — Dry sandy pine barrens, Georgia and Florida. April - May. — Stem 1° - 2° high.

94. TARAXACUM, Haller. Dandelion.

Heads many-flowered. Involucre double; the exterior of small spreading scales; the interior erect in a single row. Receptacle naked. Achenia oblong, ribbed or angled, muricate on the ribs; the apex abruptly produced into a long beak. Pappus of copious white hairs. — Stemless perennial herbs. Scapes hollow, bearing a single head of yellow flowers. Leaves all radical, oblong or lanceolate, entire or pinnatifid.

1. **T. officinale,** Weber. Leaves pinnatifid, the lobes acute, toothed; heads showy. — Damp soil, sparingly naturalized.

95. PYRRHOPAPPUS, DC.

Heads many-flowered. Involucre double, of numerous subulate scales; the inner ones erect and partially united, often with a callous appendage at the apex. Receptacle flat, naked. Achenia oblong, nearly terete, 5-furrowed; the apex narrowed into a long filiform beak. Pappus of copious soft reddish or brownish hairs. — Smooth annual herbs. Leaves oblong or lanceolate, commonly toothed or pinnatifid. Heads solitary, terminating the naked stem or peduncle-like branches. Flowers yellow.

1. **P. Carolinianus,** DC. Stem branching; leaves lanceolate, mostly toothed or pinnatifid; achenia shorter than the filiform beak. — Fields. April - July. — Stem 1° - 2° high.

96. LACTUCA, L. Lettuce.

Heads few- or many-flowered. Scales of the cylindrical involucre imbricated; the outer ones short. Receptacle naked. Achenia compressed, smooth, beaked. Pappus of copious short white hairs. — Tall biennial herbs, with entire or pinnatifid clasping leaves. Heads paniculate. Flowers white, purple, blue, or yellow.

* *Achenia abruptly contracted into a filiform beak.*

1. **L. graminifolia,** Michx. Glabrous, or nearly so, stem simple, or paniculate above, 2° - 5° high; leaves linear, acute, 4′ - 12′ long, the lower mostly pinnatifid in the middle, the earliest obovate or oblong, entire; flowers mostly blue; achenia elliptical, longer than the beak. — Dry sandy soil in the lower districts. May - August.

2. **L. Canadensis,** L. (Wild Lettuce.) Glabrous; stem 3° - 6° high, paniculate above, leaves pinnatifid from the base, acute or acuminate, 6′ - 9′ long, the upper toothed or entire; flowers yellow; achenia oval-oblong, rather longer than the beak. — Margins of fields, and woods. July - Sept.

3. **L. integrifolia,** Bigel. Stem 3° - 5° high, paniculate above, glabrous; leaves oblong-lanceolate, acuminate, clasping, entire, or the lowest denticulate, rarely lobed, 3′ - 6′ long; flowers dull yellow; achenia oval, longer than the beak. — With the last, in the upper districts. July - August.

4. **L. hirsuta,** Muhl. Stem hirsute near the base, 3° - 4° high; leaves deeply pinnatifid, more or less hirsute, 3′ - 4′ long; flowers purplish or dull red; achenia oblong-oval, about the length of the beak. — Upper districts of North Carolina (*Curtis*).

* * *Achenia tapering into a short stout beak.* — Mulgedium.

+ *Pappus white.*

5. **L. acuminata,** Gray. Smooth; stem panicled above, leaves ovate or ovate-lanceolate, acuminate, toothed, on winged petioles, the lowest sometimes sinuate-lobed; heads racemed, on spreading peduncles. — Margins of fields, etc. Sept. ② — Stem 3° - 6° high. Leaves 3′ - 6′ long, often hairy beneath. Flowers blue.

6. **L. Floridana,** Gært. Smooth; stem panicled above; leaves all pinnatifid and toothed, with the terminal lobe larger and 3-angled, or the uppermost lanceolate, sessile or clasping; heads racemose-panicled; flowers blue. — Rich soil, Florida to North Carolina. August - Sept. — Stem 3° - 6° high.

+ + *Pappus tawny.*

7. **L. leucophæa,** Gray. Smoothish; stem panicled above; leaves numerous, irregularly pinnatifid, with coarsely toothed lobes; the terminal lobe 3-angled, or in the upper leaves often linear and entire; racemes panicled. — Mountains of North Carolina. Sept. ② — Stem 3° - 12° high. Leaves 6′ - 12′ long. Flowers pale blue.

97. SONCHUS, L.

Heads many-flowered. Scales of the involucre imbricated. Receptacle naked. Achenia compressed, ribbed, not beaked nor narrowed at the apex. Pappus of copious soft white hairs. — Annuals. Leaves entire or pinnatifid. Heads somewhat umbelled. Flowers yellow.

1. **S. oleraceus,** L. Smooth; stem branching; leaves pinnatifid, with spiny-toothed lobes, clasping; the lowest petioled; achenia transversely roughened. — Waste places. Introduced. June - August. — Stem 1° - 2° high.

2. **S. asper,** Vill. Smooth, or the upper part of the stem and peduncles hispid; leaves entire, clasping, fringed with weak spines; the lowest oblong-obovate, the upper lanceolate; achenia smooth. — Fields, Florida, and northward. June – August. — Stem 2° – 3° high.

ORDER 76. LOBELIACEÆ. (LOBELIA FAMILY.)

Chiefly herbs, with milky juice. Leaves alternate, without stipules. Flowers irregular. — Calyx 5-lobed, the tube adherent to the 2-celled ovary. Corolla unequally 5-lobed, valvate in the bud; the tube split on one side to the base. Stamens 5, inserted on the calyx; the anthers, and commonly the filaments, united into a tube. Style solitary: stigma 2-lobed, surrounded with a ring of hairs. Fruit baccate and indehiscent, or capsular and 2 – 3-valved, many-seeded. Seeds anatropous. Embryo straight in fleshy albumen. — Acrid poisonous plants.

1. LOBELIA, L. LOBELIA.

Corolla bilabiate; the upper lip small, erect or reflexed, 2-parted, the lower spreading, palmately 3-cleft; the tube straight. Anthers, or a part of them, bearded at the apex, curved. Capsule 2-celled, 2-valved at the apex, many-seeded. — Stems erect. Leaves undivided; the serratures glandular. Flowers in terminal racemes or spikes Calyx sometimes with an appendage between the lobes.

* *Flowers scarlet.*

1. **L. cardinalis,** L. (CARDINAL-FLOWER.) Smooth or slightly pubescent; stem stout, simple; leaves lanceolate, denticulate; bracts leafy; stamens and style much longer than the corolla. — Muddy banks. July – Sept. ♃ — Stem 2° – 3° high. Raceme many-flowered. Flowers very showy.

* * *Flowers blue or white.*

+ *Tube of the corolla 4″ or more long.*

2. **L. syphilitica,** L. Hairy; leaves thin, lanceolate, acute at each end, coarsely serrate; racemes leafy, many-flowered; calyx hairy; the lanceolate denticulate lobes half as long as the large (1′ long) light blue corolla. — Swamps along the mountains. August – Sept. ♃ — Stem 1° – 3° high.

3. **L. puberula,** Michx. Softly pubescent or villous, or sometimes nearly smooth; leaves thickish, mostly obtuse, lanceolate or oblong, glandular-denticulate; spikes mostly 1-sided; calyx top-shaped, the linear lobes nearly as long as the tube of the bright blue corolla. — Swamps and low ground. August – Sept. ♃ — Stem 1° – 2° high. Corolla half as large as in the preceding.

4. **L. amœna,** Michx. Smooth or rough-pubescent; leaves scattered, oblong, obtuse, denticulate, the lower ones tapering into a long petiole, the uppermost nearly sessile; racemes 1-sided, many-flowered; calyx lobes linear-subulate, mostly glandular; corolla (1′ long) bright blue. — Swamps, Florida to South Carolina, and westward. Sept. – Oct. ♃ — Stem 2° – 4° high. Lowest leaves 3′ – 6′ long. Bracts small.

5. **L. glandulosa,** Walt. Smooth or pubescent; stem mostly simple, nearly leafless above; leaves thick, linear or linear-lanceolate, glandular-denticulate, sessile, the uppermost scattered and bract-like; racemes 1-sided, 3–9-flowered, the flowers distant; calyx smooth or hirsute, with linear glandular lobes; corolla (8″ – 10″ long) pale blue. — Pine barren swamps. Oct. ♃ — Stem 2° – 4° long. Lower leaves 2′ – 4′ long.

6. **L. Floridana,** Chapm. Stem stout (3° – 5° high); lowest leaves thick, lanceolate or strap-shaped, sessile by a broad base, denticulate (6′ – 9′ long); the others small and distant; raceme many-flowered; pedicels as long as the linear denticulate bracts; calyx tube obconical, in fruit enclosing the lower half of the ovoid capsule, the ovate-lanceolate lobes mostly denticulate, corolla (8″ – 9″ long) blue, villous within, the lower lip reflexed. — Wet pine barrens, Florida. June – Sept.

7. **L. brevifolia,** Nutt. Stem thick, virgate, angled, smooth or pubescent; leaves short (4″ – 12″ long), fleshy, oblong-linear, obtuse, toothed, spreading or reflexed; the lowest wedge-shaped; calyx hirsute, the ovate-lanceolate lobes strongly toothed, the 5 appendages obtuse; corolla pale blue. — Damp open pine barrens, Florida, Alabama, and westward. Oct. ♃ — Stem 1° – 1½° high. Leaves very numerous.

+- +- *Tube of the corolla less than 4″ long.*

++ *Stem leaves linear or lanceolate.*

8. **L. spicata,** Lam. Closely pubescent; stem slender, simple; lowest leaves obovate or oblong, obtuse, denticulate; the upper ones small, lanceolate, scattered; flowers small, in a long dense raceme, on short pedicels, corolla pale blue.— Dry soil in the middle and upper districts. August – Sept ② ? — Stem 1° – 2° high. Corolla 4″ – 5″ long.

9. **L. Nuttallii,** R. & S. Stem very slender, mostly simple, roughish; leaves small, entire; the lowest clustered, spatulate or obovate; the others distant, linear; flowers small, scattered in a long and slender raceme, on filiform pedicels which are longer than the bracts. — Low ground, Georgia, and northward. August – Sept. — Stem 1° – 1½° high. Corolla 3″ – 4″ long, pale blue.

10. **L. Boykinii,** Torr. & Gray. Smooth; stem slender, creeping at the base, sparingly branched above; leaves small (6″ long), subulate, scattered, the lowest scale-like; racemes loosely many-flowered, the filiform pedicels and slender calyx lobes spreading; corolla (3″ – 5″ long) bright blue. — Margins of pine barren ponds, Florida and Georgia. July – Sept. — Stem 2° high.

11. **L. paludosa,** Nutt. Smooth: stem mostly simple, nearly leafless; radical leaves spatulate-lanceolate or linear, obtuse, crenulate; the others small, linear and remote; racemes slender, loose; bracts minute; corolla small, white or pale blue, the lower lip straight. — Pine barren swamps. May – August. ♃ — Stem 2° – 4° high. Lowest leaves 3′ – 9′ long. Corolla ½′ long.

12. **L. leptostachys,** A. DC. Closely pubescent; stem slender, simple; leaves oblong-lanceolate, obtuse, denticulate; flowers small, crowded in an elongated spike; appendages of the calyx 10, subulate, as long as the tube. —

South Carolina, and northward. July – August. ♃ — Stem 1° – 1½° high Corolla 3″ – 4″ long.

13. **L. Canbyi,** Gray. Stem simple, or branching above (1° – 2° high); leaves numerous, linear, glandular-denticulate; racemes long, loosely flowered; bracts longer than the pedicels; calyx tube top-shaped, half the length of the denticulate lobes, in fruit oblong, covering the capsule; corolla deep blue, more or less bearded in the throat. — Wet places, South Carolina (*Gray*). August.

++ ++ *Leaves ovate, toothed or serrate.*

14. **L. Cliffortiana,** L. Annual; stem branching (1° – 1½° high); leaves ovate, petioled, dentate, the upper ones narrower and sessile; racemes loosely many-flowered, the pedicels longer than the bracts and flowers; calyx tube obconical, enclosing the lower half of the ovoid capsule, the lobes subulate. — Southern States (*Gray*). Introduced.

Var. **Xalapensis,** Gray. Stem weaker; leaves thinner; tube of the calyx enclosing only the base of the capsule; seeds smooth. — Manatee, South Florida (*Garber*), East Florida (*Miss Reynolds*).

15. **L. Feayana,** Gray. Annual, smooth (4′ – 8′ high); stem simple or branched; leaves few, the lowest orbicular, crenate, petioled, the others narrower, nearly sessile; racemes loosely 4 – 10-flowered; calyx tube obconical, in fruit enclosing the lower half of the capsule, the lobes subulate; seeds rough. — Damp places, East Florida.

16. **L. Gattingeri,** Gray. Smooth, stem weak, branching; leaves thin, sessile, oblong-ovate, obtuse, serrate, the lowest obovate; racemes peduncled, very slender, many-flowered; calyx tube ovoid, longer than its pedicel, shorter than the linear-subulate entire lobes; corolla (4″ – 5″ long) deep blue. — Barrens of Tennessee. April. — Stem 10′ – 20′ high. Leaves 2′ or less long.

17. **L. inflata,** L. Pubescent or hairy; stem leafy, branching from the base; leaves oblong, obtuse, toothed, sessile; racemes leafy below; corolla small, pale blue; mature capsule ovoid, inflated. — Dry sterile soil in the upper districts. August – Sept. ① or ② — Stem 1° – 1½° high. Corolla 2″ – 3″ long.

ORDER 77. GOODENIACEÆ. (GOODENIA FAMILY.)

Herbs or shrubs, with watery juice, alternate exstipulate leaves, and irregular flowers. — Calyx tubular, 3 – 5-lobed or entire, more or less adherent to the 1 – 4-celled ovary. Corolla irregular, unequally 5-lobed, induplicate in the bud; the tube split on one side, or 5-parted. Stamens 5, free from the corolla, the filaments and anthers rarely united. Style commonly single: stigma thick, surrounded with a cup-shaped mostly ciliate membrane. Fruit capsular or drupaceous. Embryo straight, in the axis of fleshy albumen.

1. SCÆVOLA, L.

Calyx 5-toothed. Corolla villous within, 5-lobed, with the lobes nearly equal and winged; the tube split on one side. Filaments and anthers free. Drupe

1–4-celled, the cells 1-seeded. — Herbs or shrubs. Leaves alternate. Peduncles axillary, dichotomous. Flowers blue or white.

1. **S. Plumieri,** Vahl. Shrubby, fleshy, smooth; leaves oblong-obovate, entire, bearded in the axils; peduncles shorter than the leaves; calyx tubular, truncate, obscurely 5-toothed; corolla thick, split to the base; stamens short; ovary 4-ovuled; drupe 2-celled, 1-seeded. — Coast of South Florida.

ORDER 78. CAMPANULACEÆ. (CAMPANULA FAMILY.)

Herbs, with milky juice, alternate leaves, and regular mostly blue flowers. — Calyx 3–5-lobed, adherent to the ovary. Corolla 5-lobed, valvate in the bud. Stamens 5, free from the corolla, the broad filaments and anthers distinct. Style single, hairy above. Stigmas 2 or more. Capsule 2–several-celled, many-seeded, splitting at the apex, or opening by lateral valves or holes. Embryo straight in fleshy albumen.

1. CAMPANULA, L. BELLFLOWER.

Calyx 5-lobed. Corolla 5-lobed, mostly bell-shaped. Filaments dilated at the base. Stigmas 3, slender. Capsule short, 3-celled, opening by lateral valves. — Flowers single, spiked, or panicled.

* *Flowers single or panicled, on slender spreading pedicels: corolla small (3″–4″), bell-shaped.*

1. **C. aparinoides,** Pursh. Stem weak, reclining, the angles, as also the margins and midrib of the linear nearly entire leaves, hispid backward; panicle few-flowered; calyx lobes triangular; corolla white. — Swamps among the mountains, Georgia, and northward. July – August. — Stem 1°–1½° high. Lowest leaves narrowly obovate.

2. **C. divaricata,** Michx. Smooth; stem terete, paniculate above; the branches somewhat naked, spreading; leaves scattered, ovate-lanceolate, acuminate at each end, coarsely serrate; calyx lobes subulate; style slightly exserted, corolla blue, nodding. — Mountains of Georgia and Carolina. July – August. — Stem 1°–2° high.

3. **C. Floridana,** Watson. Smooth; stem filiform, angular, simple or branched above (6′–12′ long); leaves lanceolate, entire (8′–12′ long), the upper ones linear; peduncles terminal; calyx lobes subulate, bidentate, spreading, longer than the 5-parted blue corolla; stigmas recurved. — South Florida.

* * *Flowers spiked, single or 2–3 together: corolla large, somewhat wheel-shaped.*

4. **C. Americana,** L. Stem tall, smooth or hairy, mostly simple; leaves ovate-lanceolate, acuminate, serrate; spike elongated, leafy; corolla (1′ wide) blue. — Dry rocky soil. August – Sept. — Stem 2°–4° high. Spike 1°–2° long. Style exserted. Earliest leaves cordate.

2. SPECULARIA, Heist.

Calyx 3–5-lobed. Corolla wheel-shaped, 5-lobed. Stamens free; the filaments membranaceous, hairy, shorter than the anthers. Stigmas 3. Capsule prismatic, 3-celled, opening by 3 lateral valves. — Low annuals. Flowers axillary. Corolla blue.

1. **S. perfoliata,** A. DC. Pubescent; stem angled, simple or branched; leaves round-cordate, crenate, clasping; the lowest narrowed at the base; flowers single or clustered, sessile, the lower ones apetalous. — Fields. May–August. — Stem 1° high.

2. **S. biflora,** Gray. Stem rough, simple, or branching at the base; leaves ovate or oblong, sessile, crenate, the upper ones bract-like; flowers single or by pairs, mostly apetalous. — With the preceding, and probably a form of it.

ORDER 79. ERICACEÆ. (HEATH FAMILY.)

Shrubs or small trees, rarely herbs, with undivided, alternate exstipulate leaves, and regular flowers. — Calyx 4–7-parted. Corolla 4–5-parted or toothed, or 4–7-petalous, imbricated in the bud. Stamens free from the corolla, and as many or twice as many as its divisions: anthers 2-celled, often variously awned, opening commonly by terminal pores. Style 1: stigma entire or 3-lobed. Fruit 3–10-celled. Seeds anatropous, attached to a central placenta. Embryo small, in fleshy albumen.

Synopsis.

SUBORDER I. VACCINIEÆ. Calyx tube adherent to the ovary. Corolla superior. Anther cells prolonged into a slender tube. Fruit a berry. — Shrubs. Corolla monopetalous.

1. GAYLUSSACIA. Berry 8–10-celled; the cells 1-seeded. Anthers awnless.
2. VACCINIUM. Berry 4-5-celled, or partially 8–10-celled by false partitions, many-seeded.
3. CHIOGENES. Berry white, 4-celled. Flowers axillary, solitary.

SUBORDER II. ERICINEÆ Calyx free from the ovary. Corolla hypogynous. Fruit a capsule — Shrubs or small trees.

TRIBE I. **ANDROMEDEÆ.** Capsule loculicidally dehiscent.

* Anther cells opening lengthwise. Corolla monopetalous.

4. EPIGÆA. Corolla salver-shaped. Leaves cordate.

* * Anther cells opening at the apex. Corolla monopetalous.

5. GAULTHERIA. Calyx becoming berry-like in fruit. Anthers 4-awned at the apex.
6. LEUCOTHOË. Calyx imbricated in the bud. Valves of the capsule entire.
7. CASSANDRA. Calyx imbricated in the bud. Pericarp separating into two layers; the outer one 5-valved, the inner 10-valved.
8. ANDROMEDA. Calyx valvate in the early bud. Capsule globular or truncate. Seeds pendulous.
9. OXYDENDRUM. Calyx valvate in the bud. Capsule pyramidal. Seeds ascending.

TRIBE II. **RHODOREÆ.** Capsule septicidally dehiscent.

* Corolla monopetalous.

10. KALMIA. Corolla wheel-shaped, with 10 cavities in which the anthers are lodged.
11. MENZIESIA. Corolla (small) ovoid, 4-toothed. Stamens 8, included.
12. RHODODENDRON. Corolla (large) funnel or bell-shaped, 5-lobed. Stamens 5 or 10, exserted.

* * Corolla of 4 – 7 separate petals.

13. LEIOPHYLLUM. Corolla 5-petalous. Anthers opening lengthwise.
14. BEJARIA. Corolla 7-petalous. Anthers opening at the apex.
15. ELLIOTTIA. Corolla 4-petalous. Anthers opening lengthwise.

SUBORDER III. PYROLINEÆ. Calyx free from the ovary. Corolla polypetalous, hypogynous. Anthers 2-horned, resupinate in the bud. Capsule loculicidal.

16. CLETHRA. Flowers racemose. Capsule 3-celled. Leaves deciduous.
17. PYROLA. Flowers racemose. Style filiform. Leaves persistent.
18. CHIMAPHILA. Flowers umbellate. Style broadly turbinate. Leaves persistent.

SUBORDER IV. MONOTROPEÆ. Calyx of 4 – 5 scale-like or bract-like sepals. Corolla 5-lobed or 5-petalous. Seeds very minute. — Fleshy scaly herbs, parasitic on roots, and destitute of green foliage.

19. SCHWEINITZIA. Corolla monopetalous, bell-shaped, 5-lobed. Anthers 2-celled.
20. MONOTROPA. Corolla 4 – 5-petalous. Anthers kidney-shaped, opening across the top.

SUBORDER I. **VACCINIEÆ.** THE WHORTLEBERRY FAMILY.

1. GAYLUSSACIA, Kunth. HUCKLEBERRY.

Corolla tubular, ovoid, or bell-shaped, 5-cleft. Stamens 10: anthers awnless. Fruit a berry-like drupe containing 10 seed-like nutlets. — Low branching mostly resinous-dotted shrubs, with white or reddish nodding flowers, in lateral bracted racemes.

1. **G. frondosa,** Torr. & Gray. Leaves entire, oblong or obovate, obtuse, rugose, glaucous, and like the spreading branches slightly pubescent; corolla small (2′′), short-bell-shaped, reddish; berry depressed-globose, blue, glaucous; bracts small, oblong. — Low ground. April. — Shrub 1° – 5° high.

2. **G. dumosa,** Torr. & Gray. Branches and racemes pubescent; leaves thick, oblong-obovate, serrulate, mucronate, soon smooth and shining; corolla (4′′ long) bell-shaped, angled, white; bracts ovate, leafy; berry globose, smooth, black. — Var. HIRTELLA. Stem taller (1° – 2° high); branches, leaves, and berries hirsute or hairy. — Low sandy pine barrens and swamps. April – May. — Shrub 6′ – 12′ high. Berry 4′′ – 6′′ in diameter.

3. **G. resinosa,** Torr. & Gray. Stem much branched; leaves oblong or obovate, entire, coated, like the branchlets, etc., with resinous viscid globules; racemes few-flowered; bracts small, deciduous; corolla small, ovoid or cylindrical, reddish; berry black, smooth. — Sandy woods in the upper districts. April – May. — Shrub 2° – 3° high.

4. **G. ursina,** Gray. Leaves large (2′–3′ long), thin, lanceolate-oblong, acute, entire; the veins, like the branches, rusty-tomentose; racemes remotely few-flowered; bracts minute; corolla bell-shaped; berry black. — Mountains of North Carolina. — Shrub 2°–3° high.

5. **G. brachycera,** Gray. Glabrous; stems 6′–12′ high; leaves thick, obovate, crenate, persistent; racemes short, closely few-flowered; corolla bell-shaped, white or reddish; filaments ciliate. — Mountains of East Tennessee.

2. VACCINIUM, L. HUCKLEBERRY, BLUEBERRY.

Corolla cylindrical, urceolate, or campanulate, 4–5-toothed or parted. Stamens 8–10: anthers awnless, or 2-awned on the back; the cells prolonged into a tube, and opening at the apex. Berry 4–5-celled, or by false partitions 8–10-celled, many-seeded. — Shrubs. Flowers nodding, solitary, clustered, or racemed, white or reddish. Pedicels 2-bracted.

§ 1. OXYCOCCUS. *Ovary 4-celled: corolla 4-parted, the narrow divisions recurved: stamens 8: anthers awnless: pedicels axillary, solitary.*

1. **V. macrocarpon,** Ait. Stems slender, creeping; leaves evergreen, small (½′ long), oblong, obtuse, pale or whitish beneath; pedicels longer than the leaves; corolla rose-color; berry large, red. — Cold mossy swamps, North Carolina, and northward. July. — Stems 1°–2° long. Berry very sour, ½′ in diameter.

2. **V. erythrocarpon,** Michx. Stem erect (2°–4° high); leaves deciduous, oblong-ovate, acuminate, serrulate, hairy beneath; pedicels shorter than the leaves; flowers pale rose-color; berry small red. — High mountains of North Carolina. July. — Branches flexuous. Berry insipid.

§ 2. VITIS-IDÆA. *Ovary 4–5-celled: corolla cylindrical or globose-campanulate, 4—-toothed: stamens 10: anthers awnless: flowers in short bracted racemes leaves persistent.*

3. **V. crassifolium,** Andr. Smooth; stems (1°–2°) filiform, procumbent; leaves small (3″–7″), short-petioled, oval or oblong, thick and shining, the revolute margins entire or slightly serrulate; racemes short, cluster like, few-flowered; corolla small, globose-campanulate, 5-toothed; berry black. (V. myrtifolium, *Michx.*) — Sandy pine barren swamps, Georgia to North Carolina. April. — Corolla white or rose-color.

§ 3. BATODENDRON. *Ovary more or less 10-celled by false partitions: corolla bell-shaped, 5-cleft: stamens 10, hairy: anthers 2-awned on the back: flowers in leafy racemes, seemingly axillary.*

4. **V. stamineum,** L. Tomentose; leaves deciduous, ovate or oblong, obtuse or slightly cordate at the base; often whitish beneath; anthers exserted; berry greenish, globose or pear-shaped. — Dry woods. May–June. — Shrub 3°–10° high. Branches spreading. Corolla short, drying purplish.

5. **V. arboreum,** Michx. Arborescent, smoothish; leaves deciduous, oval or obovate, shining above; the veins beneath more or less pubescent;

corolla large, angled, white; anthers included; berry globose, black. — Open woods. May.— Stem 8° – 15° high. Flowers very numerous. Berry mealy, ripening in the winter.

§ 4. CYANOCOCCUS. *Ovary more or less* 10-*celled by false partitions: corolla cylindrical, urceolate or obovate: stamens* 10, *hairy: anthers awnless: flowers in short small-bracted racemes or clusters.*

* *Leaves evergreen, small.*

6. **V. nitidum,** Andr. Smooth and shining throughout; stem much branched; leaves obovate or oblong-obovate, acute, glandular-serrulate, punctate beneath; calyx teeth obtuse, and, like the pedicels and broadly oval bracts, reddish; corolla ovoid or obovate, white; berry somewhat pear-shaped, black. Low pine barrens, Georgia and Florida. March – April. — Stem 1° – 2° high. Leaves ½′ long.

7. **V. myrsinites,** Michx. Stem much branched, pubescent; leaves lanceolate, oblong, or obovate, bristly-serrulate, shining above, sometimes glaucous; calyx teeth acute, reddish, like the pedicels and oblong bracts; corolla cylindrical or obovate, white; berry globose, blue. — Sandy pine barrens. March – April. — Shrub 6′ – 18′ high. Leaves ½′ – 1′ long.

* * *Leaves deciduous.*

8. **V. tenellum,** Ait. Stem much branched; the spreading branches pubescent; leaves oblong-obovate or oblanceolate, mucronate, acute at the base, slightly serrulate near the apex, pubescent when young; corolla oblong, white; berry globose, black or with a blue bloom. — Margins of pine barren swamps. April. — Shrub 1° – 3° high. Leaves ½′ – 1′ long.

9. **V. Elliottii,** Chapm. Stem tall, slender, with spreading branches; leaves distichous, ovate-lanceolate, very acute, bristly serrulate from the obtuse or rounded base, pubescent on the veins; clusters sessile, 2 – 4-flowered; corolla reddish, cylindrical, short-pedicelled; calyx teeth triangular; berry mostly solitary, small, globose, black. (V. myrtilloides, *Ell.*, not of *Michx.*) — River swamps, Florida to South Carolina. March. — Shrub 4° – 8° high; the branches smooth and mostly flexuous. Leaves ½′ – ¾′ long.

10. **V. corymbosum,** L. Stem tall (4° – 10°); leaves (1′ – 2′ long) varying from ovate-lanceolate to broadly oval, entire or nearly so, pubescent when young, becoming smoothish especially above; racemes or clusters numerous, mostly on leafless branches; corolla cylindrical or oblong; berry globose, black or blue. — Margins of ponds and swamps. Feb. – April.

Var. **pallidum,** Gray. Stem low (1° – 3°); leaves oval, pale, glaucous, glandular-mucronate, entire or obscurely serrulate, ciliate; racemes very short, sessile; corolla short-cylindrical; berry blue. — Mountains of North Carolina and Georgia. July. — Leaves 1½′ – 2′ long. Racemes 5 – 10-flowered.

Var. **fuscatum,** Gray. Taller (4° – 8° high); leaves acute at both ends, entire, pubescent beneath; racemes chiefly on naked branches; berries black. — Wet pine barrens. March.

11. **V. formosum,** Andr. Stem smooth; leaves thickish (partly perennial), ovate or oblong, entire, smooth, or pubescent beneath; racemes axillary;

corolla cylindrical, red. — Florida, in shallow ponds. — Stem 2° - 3° high. Leaves 1′ - 2′ long.

12. **V. virgatum,** Ait. Stem smooth, the branches and young leaves downy; leaves thickish, ovate or ovate-lanceolate, acute entire; racemes mostly on naked branches; corolla cylindrical, white, or red like the bracts; berry black. — Low pine barrens, Florida to South Carolina. March. — Stem 2° - 4° high. Leaves 1′ or less long.

13. **V. vacillans,** Solander. Stem smooth, with yellowish shining branches; leaves ovate or obovate, nearly entire, pale and glaucous; corolla oblong-bell-shaped, white; berry blue. — Mountains of Georgia and North Carolina. April. — Stem 1° - 2° high. Leaves 1′ - 2′ long.

14. **V. hirsutum,** Buckley. Hirsute throughout; stem low (1° high), much branched; leaves ovate, entire, slightly mucronate; racemes short, corolla oblong, contracted at the apex, the teeth short; berry globose. — Mountains of Cherokee County, North Carolina (*Buckley*).

3. CHIOGENES, Salisb. CREEPING SNOWBERRY.

Calyx 4-parted. Corolla bell-shaped, 4-cleft. Stamens 8: anther cells unawned, opening from the tip to the middle. Berry white, globular, 4-celled, many-seeded. — A small creeping evergreen. Leaves ovate, acute, the margins revolute, the lower surface, like the margins, bristly. Flowers small, axillary, white, nodding.

1. **C. hispidula,** Torr. & Gray. — Damp woods, Mountains of North Carolina, and northward.

SUBORDER II. ERICINEÆ. THE HEATH FAMILY.

4. EPIGÆA, L. GROUND LAUREL.

Calyx deeply 5-parted, colored; the lobes acuminate. Corolla salver-shaped, 5-cleft. Stamens 10: anthers oblong, awnless, opening lengthwise. Capsule depressed-globose, 5-celled, many-seeded. — A prostrate shrubby plant, hispid with rust-colored hairs. Leaves evergreen, cordate-oval, entire, reticulated. Flowers in dense bracted racemes, white, fragrant.

1. **E. repens,** L. (MAYFLOWER.) Dry woods, Florida, and northward. Feb. - March. — Stem 6′ - 12′ long. Racemes shorter than the leaves.

5. GAULTHERIA, Kalm. WINTERGREEN.

Calyx 5-lobed, becoming berry-like in fruit. Corolla ovate, 5-toothed. Stamens 10: anther cells 2-awned at the apex, opening by a terminal pore. Capsule enclosed in the berry-like calyx, depressed-globose, 5-celled, 5-valved, many-seeded. — Shrubs, with alternate leaves, and white or red flowers.

1. **G. procumbens,** L. Smooth; stem creeping; the short (3′ - 5′) branches erect, naked below; leaves oval or obovate, serrulate, shining; pedicels axillary, 1-flowered, nodding; fruiting calyx bright red. — Shady woods and banks, especially among the mountains, North Carolina, and northward. June. — Whole plant aromatic.

6. LEUCOTHOË, Don.

Calyx deeply 5-parted, imbricated in the bud, unchanged in fruit. Corolla ovate or cylindrical, 5-toothed. Stamens 10: anthers awnless, or the cells 1–2-awned at the apex, opening by a terminal pore. Stigma capitate. Capsule depressed globose, not thickened at the sutures, 5-celled, 5-valved, many-seeded. Seeds pendulous. — Shrubs, with alternate leaves, and white flowers in axillary or terminal one-sided racemes.

* *Anthers awnless or nearly so: racemes axillary, shorter than the evergreen leaves.*

1. **L. axillaris**, Don. Leaves oval or oblong, abruptly acute, spinulose-serrulate toward the apex, on short petioles; racemes short, dense-flowered; calyx lobes ovate, acute; anther cells 2-horned. (Andromeda, *Lam.*) — Sandy swamps and banks of streams in the lower districts. Feb. – March. — Stem and branches curving. Leaves 2′ – 4′ long.

2. **L. Catesbæi**, Gray. Leaves ovate-lanceolate, acuminate, spinulose-serrulate throughout, on conspicuous petioles; racemes dense-flowered; calyx lobes ovate-oblong; anther cells not horned. — Banks of streams along the mountains, Georgia and North Carolina. March – April. — Stem 2° – 4° high.

3. **L. acuminata**, Dunal. Stem tall, with straight and hollow branches; leaves ovate-lanceolate, acuminate, nearly entire; corolla cylindrical; anthers gibbous near the base. — Margins of swamps, East Florida to South Carolina. April. — Shrub 3° – 12° high. Leaves reticulated.

* * *Anther cells 1 – 2-awned at the apex: racemes terminal, longer than the serrulate pubescent deciduous leaves: calyx bracted.*

4. **L. racemosa**, Gray. Branches and racemes straight; leaves ovate-lanceolate, acute, soon smooth; racemes long, single or somewhat paniculate; corolla cylindrical-ovate; anther cells 2-awned; capsule not lobed. — Margins of ponds and swamps. April – May. — Shrub 4° – 10° high.

5. **L. recurva**, Gray. Branches and racemes recurved; leaves ovate, acuminate, pubescent on the veins; racemes long, single; corolla cylindrical; anther cells 1-awned; capsule 5-lobed. (Andromeda, *Buckl.*) — Mountains of North Carolina (*Buckley*). April. — Shrub 3° – 4° high.

7. CASSANDRA, Don.

Calyx deeply 5-parted, imbricated in the bud, 2-bracted. Corolla cylindrical-oblong, 5-toothed. Stamens 10: anthers awnless, opening by terminal pores. Capsule depressed, 5-celled, many-seeded; the pericarp separating at maturity into 2 layers, the outer one 5-valved, the inner 10-valved. — A small shrub, with evergreen serrulate leaves, and solitary axillary nodding flowers.

1. **C. calyculata**, Don. Leaves oblong, mucronate, paler and scurfy beneath, the floral ones oval; flowers in the axils of the upper leaves, small, white; calyx lobes ovate, acute. — Swamps in the mountains of South Carolina, and northward. April. — Shrub 2° – 3° high. Leaves 1′ long.

8. ANDROMEDA, L.

Calyx deeply 5-parted, valvate in the early bud. Corolla 5-toothed. Stamens 10: anther cells opening by a terminal pore. Capsule 5-celled, 5-valved, many-seeded. Seeds pendulous or spreading. — Shrubs. Leaves alternate. Flowers in lateral and terminal racemes or clusters, nodding.

* *Flowers in racemes: corolla ovoid or urn-shaped: anther cells* 1-*awned on the back: leaves coriaceous, evergreen.*

1. **A. floribunda,** Pursh. Young branches, leaves, and racemes hirsute; leaves ovate lanceolate, acute, bristly-serrulate; racemes dense-flowered, crowded in a terminal panicle; calyx lobes ovate, acute. — Damp soil along the mountains. April. — Shrub 3° - 10° high. Flowers very numerous.

2 **A. phillyreæfolia,** Hook. Smooth; stem alternately leafy and bracted; leaves oblong or lanceolate-oblong, obtuse, glandular-serrate near the apex; racemes solitary, axillary, loosely 4 - 12-flowered; calyx lobes lanceolate; corolla ovoid; capsule depressed-globose. — Shallow ponds in the pine barrens, chiefly near the coast, West Florida. Jan. - March. — Shrub 1° - 2° high.

* * *Flowers in umbel-like clusters: capsule more or less ribbed at the sutures, the ribs separating at maturity.*

+ *Corolla ovate, cylindrical, or somewhat bell-shaped: anthers or filaments awned: capsule ovate, truncate: shrubs smooth throughout.*

3. **A. nitida,** Bartr. Branches 3 angled; leaves evergreen, ovate or oblong, entire, shining; clusters axillary, very numerous, 6 - 12-flowered; sepals lanceolate-ovate, spreading; corolla cylindrical-ovate, gibbous at the base; filaments 2-awned at the apex. — Low pine barrens, common. March - May. — Shrub 2° - 6° high. Corolla white, red, or purple, odorous.

4. **A. Mariana,** L. Leaves deciduous, oblong, obtuse or acute, entire; flowering stems commonly leafless; calyx lobes lanceolate, acute, half as long as the large (½′ long) cylindrical white corolla; filaments 2-awned near the apex. — Damp soil near the coast, Florida, and northward. April - May. — Stem 2° - 4° high, often simple. Leaves 2′ - 3′ long.

5. **A. speciosa,** Michx. Leaves deciduous, oblong or elliptical, obtuse, serrate, often whitish beneath; flowering stems mostly leafless; calyx lobes ovate, several times shorter than the large bell-shaped white corolla; anther cells 2-awned at the apex. — Low pine barrens, Florida to North Carolina. — Shrub 3° - 4° high.

+ + *Corolla small, nearly globular, scurfy: anthers and filaments awnless. capsule globose: shrubs pubescent, or scurfy.*

6. **A. ferruginea,** Walt. Branches and young leaves scurfy; leaves evergreen, obovate or lanceolate-obovate, rigid, at length smooth above and whitish beneath; the margins mostly revolute; clusters few-flowered. (A. rigida, *Pursh.*) — Low sandy pine barrens, Florida to South Carolina, and westward. — A low shrub or small tree. Branches very leafy, rigid. Leaves ½′ - 1′ long.

7. **A. ligustrina,** Muhl. Leaves deciduous, oblong or oblong-obovate, serrulate, acute, pubescent like the branches, paler beneath; clusters few-

flowered, disposed in compound more or less leafy panicled racemes; filaments hairy. — Margins of swamps. May. — Shrub 3° - 4° high. Leaves 2′ long. Flowers very small.

9. OXYDENDRUM, DC. SOUR-WOOD, SORREL-TREE.

Calyx 5-parted. Corolla ovate, 5-toothed. Stamens 10: anthers awnless, opening by terminal chinks; the cells acuminate. Capsule conical, 5-angled, 5-celled, many-seeded. Seeds ascending. — A small tree, with deciduous oblong serrulate acuminate leaves, on slender petioles, and white flowers in long and slender 1-sided terminal panicled racemes.

1. **O. arboreum,** DC. — Rich woods. April - May. — Tree 15° - 40° high. Leaves 4′ - 6′ long, sour. Corolla pubescent.

10. KALMIA, L. LAUREL.

Calyx 5 parted. Corolla depressed-campanulate or rotate, 5-lobed, with 10 cavities at the sides in which the anthers are lodged. Filaments elastic. Style single. Stigma capitate. Capsule globose, 5-celled, 5-valved, many-seeded. — Shrubs, with entire alternate opposite or whorled evergreen leaves, and showy white or rose-colored flowers.

* *Flowers in corymbs.*

1. **K. latifolia,** L. (CALICO-BUSH.) Branches smooth; leaves mostly alternate, petioled, elliptical, acute at each end, green on both sides; corymbs terminal, viscid; corolla large, varying from white to deep rose-color. — Shady banks, Florida, and northward. May - June. — Shrub 4° - 10° high. Leaves shining.

2. **K. angustifolia,** L. (SHEEP LAUREL.) Branches smooth; leaves petioled, opposite or three in a whorl, narrowly oblong, obtuse, pale or glaucous beneath; corymbs lateral, glandular; flowers small, deep rose-color. — Barren hills, chiefly in the upper districts. April - May. — Shrub 2° - 3° high.

3. **K. cuneata,** Michx. Branches pubescent; leaves sessile, alternate, wedge-oblong, pubescent beneath, bristle-pointed; corymbs lateral; flowers white. — Swamps, South and North Carolina, not common. — A small shrub.

* * *Flowers solitary, axillary.*

4. **K. hirsuta,** Walt. (WICKY.) Hirsute; stems low, very leafy; leaves small ($\frac{1}{2}$′ long), oblong or oval, the margins revolute; calyx lobes leafy; flowers numerous, pale or deep rose-color; pedicels slender, longer than the leaves. — Flat pine barrens, Florida and Georgia. June - Sept. — Shrub 6′ - 18′ high.

11. MENZIESIA, Smith.

Calyx 4-toothed. Corolla ovoid, 4-toothed. Stamens 8, included: anthers awnless, opening by terminal pores. Stigma obtuse. Capsule woody, 4-celled, 4-valved, opening septicidally, many-seeded. — Shrubs, with entire alternate membranaceous leaves, and nodding greenish white flowers in terminal clusters, appearing with the leaves.

1. **M. globularis,** Salisb. — Mountains of North Carolina. July. — A straggling shrub, 3° - 6° high. Leaves deciduous, oblong, acute, hairy, glaucous beneath, glandular-pointed.

12. RHODODENDRON, L. Rose Bay, Honeysuckle.

Calyx mostly minute, 5-toothed. Corolla bell-shaped or funnel-shaped, usually somewhat irregular, 5-lobed. Stamens 5 or 10, mostly declined: anthers opening by terminal pores. Style single, elongated: stigma capitate. Capsule 5-celled, 5-valved, many-seeded. Seeds minute, scale-like. — Shrubs or small trees. Leaves alternate, entire. Flowers showy, in terminal clusters from large scaly buds.

§ 1. Azalea. —*Corolla funnel-shaped, mostly glandular-viscid externally: stamens* 5 – 7, *the long filaments and style exserted: leaves deciduous.*

* *Flowers appearing with or before the leaves.*

1. **R. nudiflorum,** Torr. Branchlets hairy; leaves obovate or oblong, pubescent, soon smoothish above; calyx lobes minute; tube of the corolla pubescent, rather longer than the lobes; corolla white, varying to deep rose-color, or sometimes yellow. — Swamps and banks of streams. April – May. — Shrub 4° – 6° high. There are many varieties.

2. **R. calendulaceum,** Torr. Branchlets hairy; leaves oblong or obovate, hairy; calyx lobes conspicuous; tube of the corolla hairy, shorter than the lobes. — Woods on the mountains of Georgia, and northward. May. — Shrub 3° – 10° high. Flowers flame-color, very showy.

3. **R. Vaseyi,** Gray. Branchlets glabrous; leaves thin, oblong or oblong-lanceolate, acute at both ends, the veins hirsute; pedicels glandular, calyx truncate; corolla glabrous, rose-color, the 3 upper lobes shorter and reflexed, all longer than the tube; stamens 5 – 7, unequal; capsule glandular. — Mountains of North Carolina. May.

* * *Flowers appearing after the leaves.*

4. **R. viscosum,** Torr. Branchlets bristly; leaves coriaceous, obovate, with the margins and veins beneath hirsute, green on both sides or glaucous beneath; corolla glandular-viscid, white; calyx teeth minute, rounded. — Swamps. July – August. — Shrub 4° – 6° high. Capsule hispid.

5. **R. arborescens,** Torr. Branchlets smooth; leaves smooth, obovate, ciliate on the margins, pale beneath; corolla glandular-viscid, rose-color; calyx lobes conspicuous, acute. — Mountains of Georgia, and northward. June. — Shrub 3° – 10° high. Flowers fragrant.

§ 2. Rhododendron. — *Corolla bell-shaped, smooth: stamens* 10: *leaves coriaceous, evergreen.*

6. **R. maximum,** L. Leaves obovate-oblong, abruptly acute, smooth and green on both sides; calyx lobes conspicuous, rounded; corolla white or rose-color, spotted within with yellow or green. — Shady banks of streams on the mountains of Georgia, and northward. July. — Stem 6° – 20° high. Leaves 4′ – 10′ long. Corolla 1′ in diameter.

7. **R. Catawbiense,** Michx. Leaves elliptic-oblong, obtuse at each end, mucronate, smooth; the young ones and branchlets tomentose; calyx lobes small; corolla purple; pedicels and capsule rusty-pubescent. — Highest summits of the mountains of North Carolina. June. — Shrub 3° – 6° high. Leaves 3′ – 5′ long.

8. **R. punctatum,** Andr. Leaves elliptical, acute at each end, glabrous; the lower surface, and dense corymbs, thickly dotted with resinous globules or scales; calyx lobes small, rounded; corolla small, somewhat funnel-shaped, rose-color, spotted within. — Along streams on the mountains. Also at Eufaula, Alabama, and Augusta, Georgia. — Stems 4° - 6° high, with spreading branches. Leaves 2′ - 3′ long.

9. **R. Chapmanii,** Gray. Stem 2° - 4° high, with erect rigid branches; leaves 1′ - 1½′ long, short-petioled, obovate, obtuse, dotted beneath, the sides revolute; corolla 1′ long, pale rose-color, spotted within, the lobes as long as the funnel-shaped tube. — Sandy pine barrens near the coast, West Florida. — April.

13. LEIOPHYLLUM, Pers.

Calyx 5-parted. Corolla of 5 spreading petals. Stamens 10, exserted: anthers opening lengthwise. Style filiform. Capsule 3-celled, 3-valved, many-seeded. — A low, smooth, much branched shrub, with very numerous thick oval entire evergreen leaves, and small white flowers in terminal clusters.

1. **L. buxifolium,** Ell. — Sandy pine barrens, and on the mountains of Carolina. May. — Shrub 6′ - 10′ high. Leaves ½′ long, alternate or opposite, glossy.

14. BEJARIA, Mutis.

Calyx 7-lobed or 7-toothed. Corolla of 7 oblong spreading petals. Stamens 14: anthers versatile, opening by terminal pores. Style elongated: stigma depressed. Capsule depressed-globose, 7-celled, 7-valved, many-seeded. — Shrubs, with alternate entire coriaceous leaves, and white or purple flowers in racemes or corymbs.

1. **B. racemosa,** Vent. (Tar-Flower.) Branches rough with scattered rigid hairs; leaves ovate-lanceolate, smooth; racemes terminal, elongated; calyx 7-toothed. — Dry sandy soil, Georgia and East Florida. June - July. — Shrub 3° - 4° high. Flowers white, showy, glutinous.

15. ELLIOTTIA, Muhl.

Calyx minute, 4-sepalous. Petals 4, oblong-linear, slightly adhering at the base. Stamens 8, included: anthers sagittate, thickened at the apex, opening lengthwise Style slender, slightly exserted: stigma capitate. Ovary 4-celled, the cells many-ovuled. Fruit unknown. — A smooth shrub, 4° - 10° high. Leaves elliptical-lanceolate, acuminate at each end, glaucous beneath. Racemes terminal, bractless, simple or compound.

1. **E. racemosa,** Muhl. — Near Waynesboro' and Augusta, Georgia (*Elliott, Olney*). — June.

Suborder III. PYROLINEÆ. The Pyrola Family.

16. CLETHRA, L.

Calyx 5-parted, imbricated in the bud. Corolla 5-petalous. Stamens 10: anthers obcordate, inverted in the bud, opening by terminal pores. Style slender, 3-cleft. Capsule 3-celled, 3-valved, many-seeded. — Shrubs or small trees. Leaves alternate, oblong or obovate, serrate, deciduous. Flowers white, in terminal racemes. Stamens and style exserted.

1. **C. alnifolia,** L. Shrubby; branches and racemes tomentose; leaves short-petioled, obovate or wedge-oblong, acute, smooth on both sides; racemes simple or panicled; style and filaments smooth; bracts partly persistent. (C. paniculata, *Pursh.*) — Varies, with the leaves hoary beneath, rough above (C. tomentosa, *Lam.*), or on both sides (C. scabra, *Pers.*); style hairy. — Swamps. July. — Shrub 4° – 8° high. Leaves 2′ – 3′ long. Flowers fragrant.

2. **C. acuminata,** Michx. Arborescent; branches and racemes white-tomentose; leaves thin, smooth, ovate or ovate-lanceolate, acuminate, on slender petioles; racemes solitary; style smooth; filaments hairy. — Mountains of North Carolina. July – August. Leaves 3′ – 4′ long.

17. PYROLA, L.

Calyx 5-parted. Petals 5, concave, deciduous. Stamens 10: anthers somewhat 4-celled, opening by terminal pores, inverted in the bud. Style long, mostly declined: stigma 5-lobed or 5-rayed. Capsule globose, 5-celled, 5-valved, opening through the cells from the base upward; the sutures pubescent. Seeds very minute, numerous. — Smooth perennial herbs, with creeping roots, and evergreen radical leaves Flowers commonly white, nodding, in a simple raceme at the summit of the nearly naked scape.

1. **P. rotundifolia,** L. Leaves orbicular, thick, nearly entire, shorter than the petioles; racemes many-flowered; stigma 5-crenate. — Dry woods in the mountains, Georgia, and northward. June – July. — Scape 1° high.

2. **P. elliptica,** Nutt. Leaves oblong-oval, thin, denticulate, longer than their petiole; racemes few – many-flowered; calyx lobes ovate, acute. — Mountains of Tennessee. July.

18. CHIMAPHILA, Pursh. PRINCE'S PINE.

Calyx 5 cleft. Petals 5, spreading, deciduous. Stamens 10, the filaments dilated in the middle: anthers somewhat 4-celled, opening by terminal pores, inverted in the bud. Stigma broad, 5-crenate, nearly sessile. Capsule globose, opening from the apex downward; the sutures naked. — Low creeping evergreens, with erect branches, lanceolate serrate whorled leaves, and whitish umbellate nodding flowers on a long peduncle.

1 **C. umbellata,** Nutt. Leaves wedge-lanceolate, narrowed at the base, serrate above the middle, not spotted; umbels 4 – 7-flowered; filaments smooth. — Open woods, North Carolina, and northward. June. — Branches 6′ – 10 high. Leaves glossy.

2. **C. maculata,** Pursh. Leaves lanceolate, broad at the base, toothed-serrate throughout, blotched with white; umbels 2 – 5-flowered; filaments villous below. — Dry open woods in the middle and upper districts. June. — Smaller than the preceding.

SUBORDER IV. **MONOTROPEÆ.** THE INDIAN-PIPE FAMILY.

19. SCHWEINITZIA, Ell.

Calyx of 5 sepals, persistent. Corolla persistent, bell-shaped, 5-lobed. Stamens 10: anthers shorter than the filaments, fixed near the apex, awnless; the cells opening at the apex. Style short and thick: stigma large, 5-angled. Capsule ovoid, 5-celled Seeds very numerous. — Stem low (3′–4′), smooth, brownish, scaly. Spike several-flowered. Flowers odorous.

1. **S. odorata,** Ell. Stem 3′–4′ high, smooth; scales ovate, imbricated; flowers spiked, crowded, nodding; sepals oblong, nearly equalling the flesh-colored corolla. — Shady woods, North Carolina. April. — Flowers violet-scented.

2. **S. Reynoldsiæ,** Gray. Scales ovate and imbricated, or narrower and scattered; flowers racemose; sepals much shorter than the white corolla. — Dry sandy thickets, near St. Augustine. Nov.

20. MONOTROPA, L. INDIAN-PIPE.

Calyx of 2–5 deciduous sepals. Corolla 4–5-petalous, gibbous at the base, deciduous. Stamens 8–10: anthers reniform, opening across the apex. Stigma broad, 4–5-rayed. Capsule ovoid, 8–10-furrowed, 4–5-celled. Seeds very numerous, minute. — Stems low, fleshy, white or reddish, scaly. Flowers solitary or racemose, nodding. Capsules erect. Herbs parasitic on roots, or decayed vegetable matter.

§ 1. MONOTROPA, Nutt. — *Stem* 1-*flowered: sepals* 2–4: *petals* 5: *anthers opening by* 2 *chinks: style short and thick.*

1. **M. uniflora,** L. — Shady woods. August–Sept. — Stem smooth, 4′–10′ high, white, turning black in drying. Flower showy.

§ 2. HYPOPITYS, Dill. — *Stem several-flowered; the upper flower commonly with* 5 *petals and* 10 *stamens; the others with* 4 *petals and* 8 *stamens: sepals as many as the petals: anthers opening by* 2 *unequal valves; the smaller one erect: style longer than the ovary.*

2. **M. Hypopitys,** L. — Shady woods. August. — Stems 4′–8′ high, pubescent, reddish.

ORDER 80. **DIAPENSIACEÆ.** (DIAPENSIA FAMILY.)

Flowers regular, perfect. Calyx and corolla pentamerous, imbricate, hypogynous. Stamens fertile, or those opposite the petals sterile. Ovary 3-celled, ovules anatropous. Placentæ central. Style single. Capsule 3-valved. Embryo small, in fleshy albumen. — Low herbaceous or shrubby plants, with simple alternate exstipulate leaves, and single or racemose flowers.

Synopsis.

TRIBE I. **DIAPENSIÆ.** Shrubby. Leaves evergreen. Corolla 5-lobed. Stamens 5, adnate to the tube of the corolla. Anther cells awn-pointed at the base, opening transversely. Flowers solitary.

1. PYXIDANTHERA. A small creeping evergreen, with white flowers.

TRIBE II. **GALACINEÆ.** Perennial stemless herbs, with persistent radical leaves. Stamens 10, those opposite the petals sterile. Anther cells opening lengthwise or transversely.

2. GALAX. Flowers small, racemed. Anthers opening transversely.
3. SHORTIA. Flowers large, solitary. Anthers opening lengthwise.

1. PYXIDANTHERA, Michx.

Calyx 3-bracted, 5-sepalous. Corolla bell-shaped, 5-lobed; the lobes rounded, imbricated in the bud. Stamens broad, adnate to the tube of the corolla: anther cells roundish, awned at the base, opening by a transverse line. Ovules 5 – 8 in each cell. Capsule few-seeded. — A small creeping evergreen, with ascending very leafy branches. Leaves linear, bearded at the base, the upper ones alternate. Flowers solitary, terminal. Sepals oblong, obtuse, ciliate. Corolla small, white.

1. **P. barbulata,** Michx. — Dry pine barrens, North Carolina, and northward. April – May. — Stems 3′ – 6′ long. Leaves 2″ – 3″ long.

2. GALAX, L.

Calyx 5-sepalous. Petals 5, hypogynous. Stamens 10, united into a 10-toothed tube, the fertile ones shorter, bearing a 1-celled anther. Stigma 3-lobed. — A smooth perennial stemless herb, erect from a creeping scaly rhizoma. Leaves all radical, evergreen, round-cordate, crenate, petioled. Scape (1° – 2° high) simple, bearing a long spiked raceme of small white flowers.

1. **G. aphylla,** L. — Open woods on the mountains. June – July. — Rhizoma deep red.

3. SHORTIA, Gray.

Calyx 5-sepalous. Petals 5, hypogynous. Stamens 10, separate, the sterile ones small and incurved. Anthers 2-celled, opening lengthwise. Style slender. Capsule globose.

1. **S. galacifolia,** Gray. Leaves 1′ – 2′ wide, oval or orbicular, serrate, shorter than the petioles; scape 3′ – 6′ high; corolla 9″ wide. — Mountains of North Carolina. April.

ORDER 81. STYRACACEÆ. (STORAX FAMILY.)

Trees or shrubs. Leaves alternate, without stipules. Flowers perfect. — Calyx 4 – 8-toothed, or entire, free, or adherent to the 2 – 5-celled ovary. Corolla hypogynous, or inserted on the calyx, 4 – 8-lobed or 4 – 8-petalous. Stamens inserted on the base of the corolla, twice as many as its divisions, or more numerous, separate, or monadelphous or polyadelphous at the base. Style single. Fruit capsular or drupaceous, 1–5-celled. Seeds anatropous, mostly solitary in each cell. Embryo nearly as long as the albumen. Cotyledons flat. Radicle slender.

Synopsis.

TRIBE I. **STYRACEÆ.** Calyx 4–8-toothed, or entire: stamens 2–4 times as many as the divisions of the corolla: ovules partly erect or spreading, and partly pendulous: pubescence stellate.

1. STYRAX. Fruit capsular, 1-celled. Ovary free from the calyx, or partly adherent.
2. HALESIA. Fruit drupaceous, 2–4-winged, 2–4-celled. Ovary wholly united with the calyx.

TRIBE II. **SYMPLOCINEÆ.** Calyx 5-cleft: stamens indefinite: ovules pendulous: pubescence simple.

3. SYMPLOCOS. Flowers in sessile clusters. Fruit baccate.

1. STYRAX, Tourn. STORAX.

Calyx 5–8 toothed, free, or partly adherent to the 3-celled ovary. Corolla deeply 5-parted, with spreading or reflexed lobes, hypogynous or perigynous. Stamens 10, free or adnate to the tube of the corolla. Style filiform. Ovary completely or partly 3-celled. Capsule globose, 3-valved, 1-seeded. — Shrubs, with a downy or scurfy stellate pubescence. Leaves entire or toothed. Flowers white, in leafy racemes.

1. **S. pulverulenta,** Michx. Leaves small (1′–1½′ long), elliptical or obovate, entire or toothed, the lower surface and branches scurfy; racemes lateral, 3–7-flowered, often by pairs, hoary; calyx teeth subulate. — Pine barren swamps, Florida and Georgia. April–May. — Shrub 2°–12° high. Racemes 1′–2′ long. Flowers fragrant.

2. **S. grandifolia,** Ait. Leaves large (2′–4′ long, oval or obovate, acute, mostly entire; the lower surface, like the branches and many-flowered racemes, hoary; calyx furrowed, with triangular acute teeth. — Rich woods, Florida to North Carolina, and westward. April–May. — Shrub 4°–6° high. Racemes 3′–5′ long.

3. **S. Americana,** Lam. Leaves thin, obovate, or oblong-obovate, acute, smooth; racemes scurfy, not hoary, 4–6-flowered, terminal; calyx teeth short, subulate. (S. glabrum and S. læve, *Ell.*) — Banks of streams, in the middle and upper districts. May. — Shrub 4°–8° high. Leaves 1′–2′ long. Racemes 1′ long.

2. HALESIA, Ellis. SNOWDROP TREE.

Calyx obconical, slightly 4–8-toothed, adnate to the 3–4-celled ovary. Corolla inserted on the calyx, 4-lobed or 4-petalous. Stamens 8–16, separate or united below, free from the corolla: anthers linear. Ovules 4 in each cell, 2 of them erect, and 2 pendulous. Drupe dry, 2–4-winged, 1–3-seeded. Seeds cylindrical. — Shrubs or small trees. Leaves ample. Flowers in short lateral racemes, appearing with the leaves, white, drooping.

* *Ovary 3-celled: corolla 4-petalous: stamens mostly 8, distinct: drupe 2-winged.*

1. **H. diptera,** L. Leaves oval, coarsely serrate, pubescent, 4′–5′ long; racemes 2–4-flowered, the flowers on long pedicels; corolla 1′ long; anthers

spreading; drupe compressed, 1′ long. — Rich woods, Florida and Georgia. March – April.

* * *Ovary* 4-*celled: corolla* 4-*lobed: stamens mostly* 12, *united below the middle: drupe* 4-*winged.*

2. **H. tetraptera,** L. Leaves oblong, finely serrate, at length smoothish, 2′ – 4′ long; flowers 2 – 4 in a cluster, 8″ – 10″ long; anthers erect. — River banks. March – April.

3. **H. parviflora,** Michx. Tomentose, at length smoothish; leaves thin, oblong-ovate, acuminate, finely serrate; flowers 2 – 4 in a cluster-like raceme; calyx top-shaped, 4-toothed; corolla deeply 4-parted; stamens 12, the pubescent filaments united at the base; style glabrous; drupe broadly club shaped, narrowly 2 – 4-winged. — Borders of swamps, East Florida (*J. D. Smith*).

3. SYMPLOCOS, Jacq.

Calyx 5-cleft, more or less adherent to the 2 – 5-celled ovary. Corolla 5 – 10-petalous. Stamens 15 or more, monadelphous or polyadelphous, inserted at the base of the corolla: anthers roundish. Ovules 2 – 4 in each cell, suspended, anatropous. Style slender: stigma entire or 3 – 5-parted. Drupe 1 – 5-seeded. — Trees or shrubs. Leaves alternate, serrate. Flowers axillary, in racemes or clusters.

1. **S. tinctoria,** L'Her. Leaves smooth, coriaceous, oblong, partly persistent; clusters sessile, 6 – 12-flowered; calyx smooth, top-shaped, the lobes obtuse; corolla yellow; stamens in 5 sets; stigma entire; drupe baccate, 1-seeded. — Low woods and banks of streams. March. — A small tree. Leaves 3′ – 4′ long, sweetish. Flowers very numerous.

ORDER 82. EBENACEÆ. (EBONY FAMILY.)

Trees or shrubs, with watery juice. Leaves alternate, entire, without stipules. Flowers polygamous; the sterile cymose; the fertile ones larger, solitary. — Calyx free from the 3 – 12-celled ovary, persistent, 3 – 7-lobed. Corolla 3 – 7-lobed, convolute in the bud, deciduous. Stamens mostly 16, inserted on the base of the corolla, often united by pairs; the filaments short and hairy: anthers introrse. Ovules 1 – 2 in each cell, anatropous, suspended. Styles distinct, or united below. Fruit baccate, roundish, few-seeded; the seeds large, compressed. Embryo in the axis of hard albumen. Radicle superior.

1. DIOSPYROS, L. PERSIMMON.

Calyx 4 – 6-lobed. Corolla bell-shaped, 4 – 6-cleft. Stamens in the sterile flower mostly 16; in the fertile 8, with the anthers sterile. Styles 2 or 4, united below. Ovules solitary in the cells. Berry 4 – 8 seeded.

1. **D. Virginiana,** L. Leaves ovate-oblong, mostly smooth, petioled; calyx 4-parted; corolla 4-cleft; styles 4, each 2-lobed; ovary 8-celled. — Woods and old fields. May – June. — A small tree. Flowers greenish. Berry eatable when fully ripe.

ORDER 83. SAPOTACEÆ. (SAPODILLA FAMILY.)

Trees or shrubs, with milky juice, alternate entire exstipulate short-petioled leaves, and regular perfect (small) flowers, commonly in sessile axillary clusters. — Calyx free from the 3 - 12-celled ovary, 4 - 8-parted, persistent. Corolla hypogynous, 4 - 8-cleft, mostly with one or two appendages between the lobes. Fertile stamens as many as the lobes of the corolla and opposite them, alternating with as many scale-like or petal-like sterile ones, inserted on the tube of the corolla: anthers extrorse. Ovules anatropous, single, suspended from the central angle of each cell, or ascending from its base. Fruit a drupe or berry. Seeds few. Albumen fleshy or oily, or none. Embryo straight.

Synopsis.

* Calyx 5-parted.

+ Corolla without appendages.

1. **CHRYSOPHYLLUM.** Sterile stamens none. Fruit a berry.

+ + Corolla with a single appendage between the lobes.

2. **SIDEROXYLON.** Sterile stamens none. Fruit a drupe. Albumen copious.

+ + + Corolla with two appendages between the lobes.

3. **DIPHOLIS.** Seed with copious albumen. Sterile stamens fimbriate. Ovary smooth.
4. **BUMELIA.** Seed without albumen. Sterile stamens entire. Ovary hairy.

* * Calyx 6 - 8-parted.

5. **MIMUSOPS.** Appendages of the corolla two between the lobes. Stamens 6 - 8.

1. CHRYSOPHYLLUM, L.

Calyx 5-parted. Corolla 5-parted, without appendages. Stamens 5. Ovary 5 - 10-celled, the ovules ascending. Berry mostly 1-celled, 1-seeded. Albumen scanty. — Tropical trees. Leaves thick, silky beneath. Flowers small, in axillary clusters.

1. **C. oliviforme,** Lam. Branchlets, etc. with copper-colored pubescence; leaves oblong-ovate, acute, entire; pedicels shorter than the petiole; corolla white; "berry black, 1-seeded." — South Florida. — A small tree. Leaves 2′ - 4′ long.

2. SIDEROXYLON, L.

Calyx 5-parted. Corolla 5-cleft, with a single appendage between the lobes. Stamens 5, the sterile ones none. Ovary hairy, 5-celled. Drupe mostly 1-celled, 1 seeded. Albumen copious. — Tropical trees. Flowers clustered.

1. **S. pallidum,** Spreng. Smooth; leaves membranaceous, elliptical, obtuse, wavy on the margins, on slender petioles; clusters few-flowered; drupe yellowish, ovoid — South Florida. — Leaves 5′ - 6′ long. Drupe 9″ long.

3. DIPHOLIS, A. DC.

Calyx 5-parted. Corolla 5-cleft, with two toothed appendages between the lobes. Stamens 5, each alternating with an ovate-lanceolate fimbriate sterile one. Ovary smooth. Drupe juiceless, 1-seeded. Albumen copious, fleshy. — A small tree, with silky branches. Leaves smooth, oblong-lanceolate, obtuse, narrowed into a short petiole. Flowers clustered, on short pedicels.

1. **D. salicifolia,** A. DC. — South Florida. — Leaves 2′ – 3′ long. Calyx silky. Drupe small, oblong.

4. BUMELIA, Swartz.

Calyx 5-parted. Corolla 5-cleft, with two appendages between the lobes. Stamens 5, each alternating with a petal-like sterile one. Ovary 5-celled, hairy. Drupe ovoid, 1-seeded. Albumen none. — Spiny shrubs, with hard wood. Leaves deciduous, oblong, narrowed into a petiole. Flowers clustered, white or greenish.

1. **B. lycioides,** Gært Leaves obovate-oblong, smooth on both surfaces; clusters many-flowered, smooth; pedicels twice as long as the flower, rather shorter than the petioles; corolla nearly twice the length of the calyx. River banks. June – July. — A large shrub or small tree. Leaves 2′ – 4′ long. Flowers greenish. Drupe ovoid.

2. **B. tenax,** Willd. Leaves oblanceolate or obovate-oblong, thin, the lower surface, like the branchlets and many-flowered clusters, covered with silky brown hairs; pedicels three times as long as the flower, shorter than the petioles; corolla white, barely longer than the calyx. — Dry soil, South Carolina, and westward. — Leaves 1½′ – 2½′ long. Drupe oval.

3. **B. lanuginosa,** Pers. Leaves obovate-oblong or obovate, coriaceous, the lower surface, like the branchlets and many-flowered clusters, covered with a dense rusty villous pubescence; corolla white, twice as long as the calyx. — Dry sandy soil, Florida to South Carolina, and westward. June – July. — A shrub or small tree. Leaves 2′ – 3′ long. Drupe small, ovoid.

4. **B. retusa,** Swartz.? Pubescence as in the preceding; leaves coriaceous, broadly obovate or roundish, notched at the rounded apex, acute at the base, short-petioled; "clusters densely many-flowered; corolla white; appendages acute; sterile stamens ovate; drupe ovoid" — Keys of Caximbas Bay, South Florida. — A shrub or small tree. Leaves 1½′ long.

5. **B. reclinata,** Vent. Glabrous or nearly so throughout, widely branched; leaves thin, obovate-oblong, attenuate at the base; pedicels few and slender, or shorter and clustered; corolla white; sterile stamens lanceolate; drupe globose. — Low ground along rivers and streams, Florida to South Carolina. June – Oct. — A straggling shrub, 3° – 5° high. Leaves 1′ – 1½′ long, ½′ wide.

6. **B. cuneata,** Gray. Smooth throughout; lateral branches short and spine-like; leaves small, coriaceous, lanceolate-spatulate or oblong obovate, obtuse, clustered; flowers few in a cluster, on short pedicels; calyx lobes ovate, obtuse, the two outer ones smaller; corolla yellowish white; drupe large, oblong. — South Florida. — A small tree. Leaves 1′ long. Drupe 3″ – 4″ long.

5. MIMUSOPS, L.

Calyx 6–8-parted; the lobes in two rows. Corolla 6–8-cleft, with 2 appendages between the lobes. Stamens 6–8, with as many 2-lobed sterile ones interposed. Ovary 6–8-celled, hirsute. Drupe globose, 1–2-celled. Albumen fleshy. — Trees or shrubs. Leaves coriaceous, clustered at the summit of the branches. Flowers axillary, white.

1. **M. Sieberi,** A. DC. Branches short, thick, tubercular; leaves rigid, smooth, oblong, emarginate at the apex, obtuse at the base, on stout petioles; pedicels as long as the petiole, recurved; calyx lobes coriaceous, ovate-lanceolate, pubescent, as long as the corolla. — South Florida. — Leaves 2′–3′ long the midrib stout, the lateral veins obscure.

ORDER 81. MYRSINACEÆ. (MYRSINE FAMILY.)

Trees or shrubs, with simple alternate exstipulate often dotted leaves, and perfect or unisexual 4–6-merous flowers. — Stamens opposite the lobes of the corolla. Anthers 2-celled. Ovary 1-celled, the ovules borne on a free globose central placenta. Style simple. Fruit globose, drupaceous or baccate, 1–many-seeded. Embryo in copious hard albumen.

Synopsis.

TRIBE I. **MYRSINEÆ.** Appendages of the corolla none. Ovules embedded in cavities of the placenta. Fruit 1-seeded.

1. MYRSINE. Flowers diœcious. Corolla imbricated in the bud.
2. ARDISIA. Flowers perfect. Corolla convolute in the bud.

TRIBE II. **THEOPHRASTEÆ.** Corolla appendaged between the lobes. Ovules not embedded in the placenta. Fruit few-many-seeded.

3. JACQUINIA. Flowers perfect, fleshy. Fruit a 10-seeded berry.

1. MYRSINE, L.

Flowers polygamo-diœcious. Calyx 4–5 parted. Corolla 4–5-cleft, imbricated in the bud. Stamens 4–5, inserted on the base of the corolla: anthers longer than the filaments, opening from the base upward. Style short: stigma capitate. Ovules 4–5, amphitropous. Drupe globose, 1-seeded. — Leaves coriaceous. Flowers small, in axillary clusters, on short pedicels.

1. **M. Rapanea,** R. & S. Smooth; leaves obovate-oblong, entire, on short petioles; clusters few-flowered; lobes of the calyx and corolla 5; drupes small, longer than the pedicels. — South Florida. — Leaves 2′–3′ long. Drupes 1″ in diameter.

2. ARDISIA, Swartz.

Flowers perfect. Calyx 5-parted. Corolla 5-cleft, convolute in the bud. Stamens 5; the anthers mostly longer than the filaments, opening from the apex downward. Ovary 1-celled, many-ovuled. Style slender: stigma acute. Drupe globular, 1-seeded. — Leaves coriaceous. Flowers in terminal racemes or panicles.

1. **A. Pickeringia,** Torr. & Gray. Smooth; leaves oblong-obovate, obtuse, entire, narrowed into a short petiole, pale beneath; panicles terminal, short; corolla dotted with minute black globules. — South Florida. July. — Leaves 2′ long. Drupe 1½″ in diameter, shorter than the pedicel.

3. JACQUINIA, L.

Calyx lobes obtuse. Corolla bell-shaped, with ovate obtuse appendages. Stamens inserted on the base of the corolla: filaments broad and flat. Style cylindrical from a conical base: stigma capitate, 5-angled. Berry pointed, 3 – 10-seeded. Albumen hard. — Leaves entire, short-petioled. Flowers in racemes.

1. **J. armillaris,** L. Branches puberulent; leaves wedge-obovate, the margins revolute; racemes chiefly terminal, many-flowered, rather longer than the leaves; corolla bell-shaped, fleshy; stamens short; the filaments dilated and connate at the base, lining the base of the corolla; fruit subglobose. — South Florida. — Leaves 1′ – 1½′ long. Fruit 5″ in diameter, orange-red.

ORDER 85. PRIMULACEÆ. (PRIMROSE FAMILY.)

Herbs, with chiefly whorled or opposite leaves, and regular flowers. — Calyx 4 – 5-lobed, persistent. Corolla 4 – 5-lobed. Stamens 4 – 5, opposite the lobes of the corolla, and inserted on its tube. Ovary free, or partly adherent to the calyx, 1-celled, many-ovuled. Placenta central, globose. Style single. Capsule 1-celled, many-seeded, valvate or circumscissile. Seeds anatropous or amphitropous. Embryo straight in fleshy albumen.

Synopsis.

* Ovary free from the calyx.

+ Capsule opening by valves or teeth.

1. HOTTONIA. Corolla salver-shaped. Leaves pectinately dissected.
2. LYSIMACHIA. Corolla lobes entire. Sterile filaments none. Anthers oval.
3. STEIRONEMA. Corolla lobes denticulate. Sterile filaments between the fertile. Anthers linear.
4. DODECATHEON. Corolla wheel-shaped. Stemless. Leaves radical.

+ + Capsule opening transversely.

5. ANAGALLIS. Parts of the flower 5. Leaves opposite. Stamens bearded.
6. CENTUNCULUS. Parts of the flower 4. Leaves alternate. Stamens beardless.

* * Ovary partly adherent to the calyx.

7. SAMOLUS. Stamens 5, with sterile filaments interposed. Capsule valvate.

1. HOTTONIA, L.

Calyx 5-parted. Corolla salver shaped, 5-lobed. Stamens 5. Style slender. Capsule globose, at length splitting into 5 valves, which cohere at the base and apex. Seeds fixed by the base, anatropous. — Aquatic perennial herbs, with pectinately dissected leaves. Flowering stems mostly clustered, nearly leafless, inflated, bearing at the joints whorls of small white flowers.

1. **H. inflata,** Ell. Flowering stems 3 – several in a terminal cluster, much inflated; upper stem leaves crowded, with filiform divisions; bracts entire. — Ponds and ditches in the upper districts. June.

2. LYSIMACHIA, L. LOOSESTRIFE.

Calyx 5-parted. Corolla rotate, 5-lobed, the lobes convolute, entire. Stamens 5, monadelphous, no sterile ones. Anthers oval. Style slender. Capsule globose, valvate, few – many-seeded. — Perennial herbs, with entire, commonly dotted leaves, and solitary or racemose yellow flowers.

1. **L. stricta,** Ait. Stem smooth, erect, branching; leaves opposite, lanceolate, or narrower, acute at each end; racemes long, leafy at the base; pedicels slender; lobes of the corolla lanceolate-oblong, marked with dark lines; filaments unequal; capsule 3 – 5-seeded. — Low ground in the middle and upper districts. July. — Stem 1° – 2° high. Leaves 2′ long. Flowers small.

2. **L. Fraseri,** Duby. Stem glandular-pubescent at the summit, erect; leaves opposite, ovate or cordate-ovate, acuminate, narrowed into a short petiole; flowers in a leafless panicle; calyx bell-shaped, the lobes fringed on the margins; lobes of the corolla ovate-lanceolate, obtuse, entire. — Mountains of Alabama, North Carolina, and Tennessee.

3. **L. asperulæfolia,** Poir. Stem erect, smooth, simple; leaves (and flowers) four in a whorl, ovate-lanceolate, sessile, dotted; flowers racemose, on short pedicels, the upper ones scattered; lobes of the corolla oblong-lanceolate, dotted. — Near Columbia, South Carolina (*Elliott*), North Carolina (*Curtis*, *Croom*). — Stem 2° high. Leaves faintly 3 – 5-nerved.

4. **L. quadrifolia,** L. Stem pubescent, simple; leaves 4 – 5 in a whorl, ovate-lanceolate, acute, dotted, sessile; peduncles axillary, filiform; lobes of the corolla ovate-oblong, dotted. — Shady woods in the upper districts. July. — Stem 2° high.

3. STEIRONEMA, Raf.

Lobes of the corolla denticulate. Stamens separate, alternating with sterile filaments. Anthers linear. Flowers axillary. Otherwise like the last.

1. **S. ciliata,** L. Stem mostly branching, smooth; leaves opposite, lanceolate-ovate, acute, cordate or rounded at the base, on ciliate petioles; corolla longer than the calyx, with broadly ovate or roundish denticulate lobes; peduncles opposite. — Varies (L. hybrida, *Michx.*) with the leaves lanceolate or ovate-lanceolate, narrowed into a short petiole; the uppermost, like the peduncles, often whorled; or (L. heterophylla, *Michx.*) with the lowest leaves obovate, the others long, lanceolate; or (L. angustifolia, *Lam.*) with linear nearly sessile leaves, and a more slender stem, and smaller flowers. — Woods and thickets, chiefly in the upper districts. July – Aug. — Stem 1° – 2° high. Leaves 2′ – 4′ long.

2. **S. radicans,** Hook. Smooth throughout; stem long, prostrate; the slender branches often rooting at the apex; leaves opposite, ovate-lanceolate,

acute, on long slender petioles; peduncles longer than the leaves; corolla as long as the calyx. — Swamps and marshy banks of streams, in the upper districts. July. — Stem 2° - 3° long. Flowers smaller than in any form of the preceding.

4. DODECATHEON, L. American Cowslip

Calyx 5 cleft, the lobes reflexed. Corolla tube very short, the 5-parted limb reflexed. Stamens 5, the filaments monadelphous at the base: anthers long and linear, erect. Capsule oblong-ovate, 5-valved at the apex, many-seeded. — Stemless herbs. Leaves radical, clustered, spatulate or oblong. Flowers umbellate, terminating the naked scape, white or purple.

1. **D. Meadia,** L. Smooth; leaves entire or obscurely crenate; umbel bracted, many-flowered; flowers showy, nodding. — Woods in the upper districts. May - June. ♃ — Scape 1° high. Leaves 4′ - 6′ long.

5. ANAGALLIS, L. Pimpernel.

Calyx 5-parted. Corolla wheel-shaped, 5-parted, longer than the calyx. Stamens five: filaments bearded. Capsule globose, opening transversely, many-seeded. — Low herbs, with opposite or whorled leaves, and axillary peduncled flowers.

1. **A. arvensis,** L. Stem branching, spreading, 4-angled; leaves ovate, sessile; peduncles longer than the leaves, nodding in fruit; flowers red. — Fields and pastures. Introduced. July. ① — Stem 6′ long.

6. CENTUNCULUS, L.

Calyx 4 - 5-parted. Corolla bell-shaped, 4 - 5-cleft, shorter than the calyx. Stamens 4 - 5, beardless. Capsule globose, many-seeded, opening transversely. — Small annuals, with alternate leaves, and minute axillary white flowers.

1. **C. minimus,** L. Stem 3-angled, ascending, mostly branched; leaves obovate, acute; flowers often clustered. — Low ground near the coast. March - April. — Stem 1′ - 6′ long.

2. **C. pentandrus,** R. Br. Stems erect, simple (4′ - 8′ high); leaves oval or roundish, mucronate; peduncles 2 - 3 times the length of the pentandrous flower; lobes of the calyx and corolla 4 or 5. — Low ground along the Caloosa River, South Florida. Oct.

7. SAMOLUS, L.

Calyx 5-cleft; the tube adherent to the base of the ovary. Corolla salver-shaped, 5-parted, commonly with slender filaments interposed. Stamens 5, included. Capsule 5-valved at the apex, many-seeded. — Smooth and somewhat fleshy marsh herbs, with alternate entire leaves, and small white flowers in terminal racemes.

1. **S. floribundus,** Kunth. Stem at length much branched; leaves obovate, the lowest tufted, spreading, the others scattered: racemes many-

flowered; pedicels long, filiform, minutely bracted in the middle; capsule globose, longer than the calyx; flowers minute. — Wet places. May – July. ② — Plant 6′ – 12′ high, pale green.

2. **S. ebracteatus,** Kunth. Stem simple or sparingly branched, naked above; leaves spatulate-obovate; racemes few-flowered; pedicels bractless; capsule shorter than the calyx; flowers conspicuous. — Saline marshes, Florida, and westward. May – June. — Stem 1° – 2° high.

ORDER 86. PLUMBAGINACEÆ. (LEADWORT FAMILY.)

Herbs or shrubs, with scattered or radical and clustered leaves. — Calyx tubular or funnel-shaped, 5-toothed, plaited, persistent. Corolla salver-shaped, 5-lobed or 5-petalous, with the 5 stamens opposite the lobes or petals, and inserted on their claws or on the receptacle. Styles 5, distinct or united. Ovary 1-celled, with the solitary anatropous ovule suspended from the apex of the filiform cord which arises from the base of the cell. Fruit utricular or capsular, variously dehiscent. Embryo straight in mealy albumen.

1. STATICE, L. MARSH ROSEMARY.

Calyx bracted; the limb scarious, 5-lobed. Petals 5, distinct, or united by their claws. Stamens 5, inserted on the claws of the petals. Styles separate or nearly so: stigmas slender. Utricle variously dehiscent. — Perennial herbs, growing in saline marshes, with fleshy chiefly radical leaves, and scape-like stems.

1. **S. Caroliniana,** Walt. Leaves oblong or obovate, tapering into a long petiole; scape scaly, widely branching; flowers mostly single, in 1-sided spreading spikes; calyx funnel-shaped, smooth, the lobes of the scarious limb alternating with 5 smaller ones. — Salt marshes, Florida, and northward. August – Sept. — Scape ½° – 2° high. Leaves 3′ – 6′ long. Flowers blue.

2. **S. Brasiliensis,** Boissier. Leaves oblong, rounded or emarginate at the apex, thin; scape and spreading panicle slender (1° – 2° high); spikelets 1 – 3-flowered, more or less distant; bractlets very unequal; calyx smooth, the ovate lobes acute; corolla white. — Coast of Florida to North Carolina.

2. PLUMBAGO, Tourn. LEADWORT.

Calyx tubular, 5-ribbed, 5-toothed. Corolla salver-shaped, 5-lobed. Stamens 5, inserted on the receptacle. Styles united. Stigmas linear. Utricle splitting into valves from the base upward. — Herbs or shrubs, with alternate entire mostly clasping leaves, and blue or white flowers in terminal spikes.

1. **P. scandens,** L. Shrubby; leaves ovate-lanceolate, acute, narrowed into a clasping petiole; calyx glandular-viscid, half as long as the tube of the corolla; lobes of the corolla ovate, white; style smooth. — South Florida. — Leaves 2′ – 3′ long. Spike elongated.

ORDER 87. LENTIBULACEÆ. (BLADDERWORT FAMILY.)

Aquatic or marsh herbs, with entire or dissected leaves, and irregular flowers. — Calyx 2-lipped. Corolla 2-lipped, personate, spurred at the base. Stamens 2, short, included: anthers 1-celled. Ovary free, ovoid, 1-celled. Ovules numerous, anatropous, inserted on the free central globose placenta. Style short: stigma 2-lipped, the lower lip larger and covering the anthers. Capsule globose, many-seeded, opening irregularly. Embryo straight and thick. Albumen none.

1. UTRICULARIA, L. BLADDERWORT.

Lips of the calyx entire. Throat of the corolla nearly closed by the projecting palate; the lips entire or slightly lobed, the lower one with an appressed or depending spur at the base. — Herbs, floating in still water by means of small air-bladders attached to the finely dissected leaves (or roots), or rooting in damp earth, with entire leaves, and few or no air-bladders. Scapes or peduncles 1 – many-flowered.

* *Stem floating: upper leaves whorled, on inflated petioles; the others scattered and finely dissected: flowers yellow.*

1. **U. inflata,** Walt. Scape 5 – 10-flowered; corolla large ($\frac{3}{4}$′ wide); the lower lip 3-lobed, twice as long as the appressed conical notched spur, the upper concave, nearly entire; fruit nodding. — Var. MINOR. Every way smaller; scape 2-flowered. — Ponds and ditches, Florida to North Carolina, and westward. April – May. — Stem 2° long. Scape 6′ – 12′ high.

* * *Stem floating: leaves all scattered and finely dissected: flowers yellow.*

2. **U. vulgaris,** L.? Leaves decompound; scape scaly, 5 – 12-flowered; throat of the corolla closed by the prominent palate; the lobes nearly entire, with reflexed margins, longer than the conical obtuse somewhat spreading spur; fruit nodding. — Ponds and still water. May – July. — Stem 2° – 3° long. Scapes 6′ – 12′ high. Corolla $\frac{1}{2}$′ wide.

3. **U. striata,** Leconte. Leaves decompound; scape slender, sparingly bracted, 5 – 6-flowered; lips of the long pedicelled corolla nearly equal, 3-lobed, the upper one concave, striate in the middle, the lower with reflexed margins, as long as the linear nearly appressed notched spur; palate dotted with brown. — Still water, Florida, and northward. Sept. — Scapes 10′ high. Corolla $\frac{1}{2}$′ wide.

4. **U. biflora,** Lam. Small; leaves short, sparingly divided, root-like; scape 1 – 3- (mostly 2-) flowered, almost bractless; lips of the small (4″ – 5″) corolla equal, roundish; the upper one slightly 3-lobed; the lower entire, rather shorter than the subulate appressed spur; palate globose, 2-lobed — Ponds, Florida to South Carolina. May – June — Stem 4′ – 6′ long, with clustered branches. Scape 2′ – 4′ high.

5. **U. fibrosa,** Walt. Scape filiform, 1 – 3-flowered; pedicels long and slender; upper lip of the corolla slightly 3-lobed; the lower entire, as long as the conical obtuse spur. — Miry margins of ponds. Sept. — Scape 4′ – 10′ high. Corolla 6″ – 8″ wide.

6. **U. gibba,** L. Stem short, with clustered branches; leaves sparingly divided; scape 1-2-flowered; lips of the corolla nearly equal, longer than the gibbous obtuse appressed spur. — Shallow ponds, South Carolina (*Elliott*), and northward. June. — Stem 2′-3′ long. Scape 1′-3′ high.

* * * *Stem floating: leaves whorled, finely dissected: flowers purple.*

7. **U. purpurea,** Walt. Stem long, filiform; scape mostly 1-flowered; upper lip of the corolla truncated; the lower 3-lobed, with the lateral lobes sac-like, longer than the subulate spur. — Shallow ponds. June. — Stem 1°-2° long. Scape 2′-3′ high. Corolla 4″ wide.

* * * * *Stemless: scape rooting, scaly: leaves linear and entire, or none: air-bladders few or none: flowers yellow.*

8. **U. cornuta,** Michx. Scape 2-4-flowered; pedicels short, as long as the calyx; lips of the large (¾′ wide) corolla obovate, unequal; the lower one larger, abruptly pointed, entire, as long as the horn-shaped acute depending spur, the margins strongly reflexed. — Swamps, Florida, and northward. July-Sept. — Scape 1° high.

9. **U. juncea,** Vahl. Scape loosely 3-12-flowered; pedicels shorter than the calyx; corolla 4″-5″ wide, the prominent palate closing the throat; spur subulate, depending, as long as the corolla; stamens slightly curved. — Marshy margins of ponds and streams, near the coast. Sept.-Oct. — Scape 6′-12′ high.

10. **U. longeciliata,** A. DC. Scape 3-7-flowered (6′ high), the pedicels shorter than the calyx; upper lip of the small (5″ long) yellow corolla obovate, the lower one nearly entire, with reflexed margin, as long as the horn-shaped spur; leaves numerous, linear; scales and bracts long-ciliate-dentate. — Miami, South Florida (*Garber*).

11. **U. subulata,** L. Scape setaceous, 3-9-flowered; pedicels much longer than the calyx; lower lip of the small (3″-4″) corolla 3-lobed, longer than the appressed conical green-pointed spur; leaves, when present, linear, fugacious. — Wet sandy pine barrens, Florida to North Carolina, and westward. Feb.-May. — Scape 2′-8′ high.

2. PINGUICULA, Tourn. BUTTERWORT.

Upper lip of the calyx 3-lobed, the lower 2-lobed. Corolla somewhat 2-lipped; the upper lip 2-lobed; the lower 3-lobed, spurred at the base; palate hairy. — Stemless herbs. Leaves all radical, clustered, entire, with the margins commonly involute. Scape naked, commonly viscid.

* *Flowers yellow.*

1. **P. lutea,** Walt. Clammy-pubescent; leaves oblong-obovate; corolla large, with the rounded lobes 2-4-cleft; spur subulate. — Open flat pine barrens, common. Feb.-April. — Plant yellowish. Scape 6′-12′ high. Corolla 1′-1½′ wide, nodding.

* * *Flowers purple, often changing to white.*

2. **P. elatior,** Michx. Leaves clammy-pubescent, spatulate-ovate; scapes villous near the base; lobes of the corolla 2-cleft, rounded; spur obtuse. —

Margins of ponds, Florida to North Carolina. March – April. — Scapes 8′ – 12′ high. Corolla 1′ wide.

3. **P. planifolia.** Smoothish; leaves lanceolate or oblong, flat; corolla 5-parted, the wedge-obovate lobes 2-cleft, acutish; spur sac-like, obtuse. (P. australis, *S. Flora, not of Nutt.*) — Shallow ponds, West Florida, near the coast. March. — Scapes 1° high. Corolla 1′ wide.

4. **P. pumila,** Michx. Clammy-pubescent; leaves roundish or obovate; lobes of the corolla obcordate, the spur short and obtuse, or subulate, and as long as the tube. (P. Floridensis, *S. Flora.*) — Low sandy pine barrens, Georgia, Florida, and westward. March – April. — Scape 2′ – 6′ high. Corolla $\frac{1}{2}$′ – $\frac{3}{4}$′ wide.

ORDER 88. BIGNONIACEÆ. (BIGNONIA FAMILY.)

Herbs, shrubs, or trees, with simple or compound leaves, and regular or somewhat irregular showy flowers. — Calyx 2-lipped, 5-lobed, or truncate and entire. Corolla tubular or bell-shaped, mostly 2-lipped. Fertile stamens 2, or 4 and didynamous, inserted on the corolla: anther cells diverging. Ovary 2-celled, many-ovuled; the base surrounded with a glandular disk. Style filiform: stigma 2-lipped. Capsule 2-valved, 2- or 4-celled, many-seeded. Embryo flat. Albumen none.

Synopsis.

SUBORDER I. BIGNONIEÆ. Trees, shrubs, or woody vines. Capsule 2-celled, the valves separating from the partition. Seeds flat, winged. Cotyledons notched at each end. — Leaves opposite.

1. **BIGNONIA.** Valves of the capsule parallel with the partition. Leaves compound.
2. **TECOMA.** Valves of the capsule contrary to the partition. Leaves compound.
3. **CATALPA.** Valves of the capsule contrary to the partition. Leaves simple.

SUBORDER II. SESAMEÆ. Herbs. Capsule 4-celled. Seeds wingless. Cotyledons thick, entire.

4. **MARTYNIA.** Capsule woody, beaked. Leaves simple, alternate or opposite.

1. BIGNONIA, Tourn. CROSS-VINE.

Calyx cup-shaped, truncate or slightly 5-toothed. Corolla tubular-bell-shaped, 5-lobed. Fertile stamens 4, didynamous; anthers smooth. Valves of the capsule flattened parallel with the partition, and separating from it at maturity. Seeds flat, winged. — Climbing woody vines. Leaves opposite, compound.

1. **B. capreolata,** L. Leaves evergreen; the short petiole terminated by 2 cordate-oblong entire stalked leaflets, with a branched tendril between; pedicels clustered, axillary, elongated. — Woods. April. — Stem climbing high. Leaflets 3′ – 6′ long. Corolla 2′ long, red without, yellow within. Capsule $\frac{1}{2}$° long.

2. TECOMA, Juss. TRUMPET-FLOWER.

Calyx bell-shaped, 5-toothed. Corolla funnel-shaped, 5-lobed. Fertile stamens 4, didynamous. Valves of the capsule convex, contrary to the partition. Seeds winged. — Shrubs or woody vines. Leaves opposite, compound, deciduous.

1. **T. radicans**, Juss. — Stem climbing by rootlets; leaves pinnate, more or less pubescent; leaflets 9 – 11, ovate or ovate-lanceolate, acute or acuminate, serrate; racemes terminal, few-flowered. — Woods and margins of fields. May – June. — Corolla 2′ – 3′ long, scarlet without, yellow within. Capsule 4′ – 5′ long.

2. **T. stans**, Juss. Stem erect; leaves smooth, pinnate, long-petioled; leaflets 7, lanceolate, acute, finely serrate; racemes many-flowered; calyx tubular; stamens 5, the fifth bearing an abortive anther. — South Florida. March – May. — Stem 3° – 4° high. Corolla 1½′ long, yellow.

3. CATALPA, Scop.

Calyx 2-lipped. Corolla bell-shaped, somewhat 2-lipped, 5-lobed. Fertile stamens 2. Valves of the cylindrical capsule contrary to the partition. Seeds flat, with fimbriate wings. — Small trees. Leaves simple, opposite. Flowers in terminal panicles.

1. **C. bignonioides**, Walt. Leaves large, cordate, entire or angularly lobed, acuminate, long petioled, pubescent; panicle trichotomous, many-flowered; calyx purple; corolla white, variegated with yellow and purple within, the lobes undulate; capsule slender, elongated, pendulous. — River banks, Georgia, Florida, and westward. May. — Corolla 1′ long. Capsules 1° long.

2. **C. speciosa**, Warder. Leaves cordate or truncate, downy beneath, inodorous; panicle large and loose; lower lip of the corolla notched, shorter than the upper, the broadly obconic tube striped within with brown and yellow; capsule terete, furrowed; seeds acute. — River banks, Tennessee, and westward. May. — Taller than the preceding, with thicker and rougher bark, larger flowers, and thicker capsules.

4. MARTYNIA, L. UNICORN PLANT.

Calyx 5-cleft, 2 – 3-bracted. Corolla irregular, tubular-bell-shaped, unequally 5-lobed. Fertile stamens 2 or 4. Capsule woody, falsely 4-celled, ending in two long recurved horns, and opening between them. Seeds wingless. — Viscid branching annuals. Leaves petioled, entire, roundish, the upper ones alternate. Flowers racemed.

1. **M. proboscidea**, Glox. — Stems thick, at length prostrate; leaves round-cordate; corolla (1½′ long) whitish, spotted with yellow and purple; capsule crested on one side, shorter than the beaks. — Waste places. Introduced. July – August.

ORDER 89. OROBANCHACEÆ. (BROOM-RAPE FAMILY.)

Low, leafless, scaly herbs, parasitic on roots, with bilabiate didynamous flowers. — Calyx 4–5-toothed or parted. Corolla withering-persistent, tubular, the upper lip 2-cleft or entire, the lower 3-lobed. Stamens inserted on the tube of the corolla : anthers persistent. Ovary free, 1-celled, with 2–4 parietal placentæ. Style simple, curved at the apex : stigma thick, 2-lobed. Capsule 2-valved, many-seeded. Seeds very small, anatropous, with the minute embryo at the base of transparent albumen. — Flowers perfect or polygamous, solitary or spiked.

Synopsis.

1. EPIPHEGUS. Flowers polygamous, spiked ; the lower ones fertile, the upper sterile. Calyx 2-bracted, 5-toothed. Stem branching.
2. CONOPHOLIS. Flowers perfect, spiked. Calyx 2-bracted, cleft on the lower side. Stem simple, thick and fleshy.
3. APHYLLON. Flowers solitary, perfect. Calyx bractless, 5-cleft. Corolla nearly equally 5-lobed.

1. EPIPHEGUS, Nutt. BEECH-DROPS.

Flowers polygamous ; the upper ones slender and sterile, the lower abbreviated and fertile. Calyx 5-toothed. Capsule 2-valved at the apex, with 2 placentæ on each valve. — Stem smooth, slender, much branched, purplish. Flowers small, in loose slender spikes. Corolla purplish.

1. **E. Virginiana**, Bart — Under beech trees, in deep shades. August. — Stems 6′–12′ high. Flowers scattered. Corolla of the sterile flowers 4″–6″ long, 4-toothed, curved.

2. CONOPHOLIS, Wallr. SQUAW-ROOT.

Flowers perfect, densely spiked. Calyx 2-bracted, tubular, 4-toothed, cleft on the lower side. Upper lip of the corolla arching, notched ; the lower short, 3-toothed. Stamens exserted. Capsule 2-valved, with 2 placentæ on each valve. — A thick and fleshy whitish simple herb, covered with imbricated scales. Flowers yellowish, spreading.

1. **C. Americana**, Wallr. — Shady woods. April. — Stems clustered from matted roots, 4′–6′ high, ½′ thick.

3. APHYLLON, Mitchell.

Flowers solitary, perfect. Calyx 5-cleft, bractless. Corolla tubular, curved, nearly equally 5-lobed. Stamens included. Capsule 2-valved, with 4 equidistant placentæ. — Stemless or nearly so. Flowers purplish, on a long scape or peduncle.

1. **A. uniflorum**, Torr. & Gray. — Stem very short and scaly ; peduncles 1 - several, 3′-5′ high, pubescent ; calyx lobes lanceolate-subulate. — Woods, Florida, and northward.

ORDER 90. SCROPHULARIACEÆ. (FIGWORT FAMILY.)

Chiefly herbs. Leaves commonly opposite, without stipules. Calyx 4 – 5-cleft, or parted. Corolla 4 – 5-lobed, regular, or bilabiate; the lobes imbricated in the bud. Fertile stamens 4 (sometimes 2, rarely 5), mostly didynamous, inserted on the tube of the corolla: anther cells often separate, opening lengthwise. Ovary free, 2-celled, many-ovuled. Placentæ central. Style simple or 2-cleft. Capsule 2-celled, many- (rarely 1 – few-) seeded. Seeds anatropous. Embryo small, in copious albumen.

Synopsis.

§ 1. Upper lip of the corolla exterior in the bud (except Mimulus). Capsule commonly septicidally dehiscent.

* Stamens 5, all perfect. Corolla regular.

1. **VERBASCUM.** Corolla wheel-shaped. Filaments, or a part of them, bearded. Leaves alternate.

* * Fertile stamens 4; the fifth sterile or rudimentary. Flowers cymose. Leaves opposite.

2. **SCROPHULARIA.** Fifth stamen scale-like. Corolla globose or oblong; four of the lobes short and erect.
3. **CHELONE.** Fifth stamen shorter than the others. Corolla tubular, inflated, contracted at the throat. Seeds winged.
4. **PENTSTEMON.** Fifth stamen as long as the others. Corolla dilated upward. Seeds wingless.

* * * Fertile stamens 4: sterile ones none. Flowers axillary or racemed.

5. **LINARIA.** Corolla spurred at the base. Capsule toothed at the apex.
6. **MIMULUS.** Calyx tubular, 5-angled, 5-toothed. Corolla large.
7. **HERPESTIS.** Calyx 5-parted; the three outer lobes much larger. Corolla short.
8. **CONOBEA.** Calyx 5-parted, the lobes equal. Leaves pinnatifid.

* * * * Fertile stamens 2: sterile ones 2 or none.

9. **GRATIOLA.** Calyx 5-parted. Sterile filaments entire, included. Capsule ovate or globose.
10. **ILYSANTHES.** Calyx 5-parted. Sterile filaments 2-cleft, exserted. Capsule oblong.
11. **MICRANTHEMUM.** Calyx 4-parted. A scale-like appendage below the filaments.

§ 2. Upper lip of the corolla interior in the bud. Capsule commonly loculicidally dehiscent.

* Corolla regular or slightly 2-lipped: the lobes nearly equal.

+ Stamens 2, distant. Capsule mostly obcordate.

12. **AMPHIANTHUS.** Style 2-cleft. Flowers solitary, terminating the central scape and in the axils of the tufted radical leaves.
13. **VERONICA.** Style simple. Flowers in leafy racemes or spikes.

+ + Stamens 3 – 5, equal. Peduncles axillary, 2 or more together.

14. **CAPRARIA.** Corolla bell-shaped, 5-cleft. Capsule loculicidal. Leaves alternate.
15. **SCOPARIA.** Corolla wheel-shaped, 4-cleft. Capsule septicidal. Leaves opposite or whorled.
16. **HYDRANTHELIUM.** Corolla 3-cleft. Stamens 3.

+ + + Stamens 4. Flowers racemed or spiked.

++ Anthers 1-celled.

17. **BUCHNERA.** Corolla salver-shaped. Stamens didynamous. Flowers spiked.

++ ++ Anthers 2-celled. Stamens equal.

18. **SEYMERIA.** Corolla bell-shaped, yellow. Stamens included.
19. **MACRANTHERA.** Corolla tubular, orange. Stamens long-exserted.

++ ++ ++ Anthers 2-celled. Stamens didynamous.

20. OTOPHYLLA. Anthers unequal. Corolla bell-shaped. Upper leaves 2-eared at the base.

21. DASYSTOMA. Anthers equal, awned at the base. Corolla funnel-shaped, yellow. Leaves mostly pinnatifid.

22. GERARDIA. Anthers equal, pointed at the base. Corolla bell-shaped, purple. Leaves narrow, entire.

* * Corolla tubular, 2-lipped; the upper lip arching and enclosing the 4 didynamous stamens.

+ Anther cells unequal.

23. CASTILLEIA. Anther cells separate. Leaves alternate, the floral ones colored.

+ + Anther cells equal.

24. SCHWALBEA. Calyx 10-12-ribbed, the upper teeth smaller. Capsule oblong, many-seeded. Leaves entire, alternate.

25. PEDICULARIS. Capsule sword-shaped, few-seeded. Leaves pinnatifid.

26. MELAMPYRUM. Calyx 4-cleft. Capsule flat, 1-4-seeded. Upper leaves bristly-toothed at the base.

1. VERBASCUM, L. MULLEIN.

Calyx 5-parted. Corolla rotate, 5-lobed; the lobes nearly equal, roundish. Stamens 5, declined, all, or a part of them, bearded. Stigma simple. Capsule globose, many-seeded. — Tall biennial herbs. Leaves alternate. Flowers in racemes.

1. **V. Thapsus,** L. Woolly throughout; stem stout, simple; leaves slightly crenate, rugose; the lowest large, oblong, petioled, the others broadly decurrent on the stem; raceme spike-like, dense, cylindrical; flowers yellow. — Old fields and waste ground. Introduced. — Stem 2° - 5° high. Lowest leaves 1° long. Raceme rigid, 1° - 2° long.

2. **V. Blattaria,** L. Stem smooth below, pubescent above, sparingly branched or simple; leaves smooth, oblong, acute, serrate or pinnately lobed; the lowest petioled; the upper clasping; racemes elongated, glandular, the flowers scattered; corolla bright or pale yellow; filaments all bearded with purple hairs. — Waste ground, chiefly in the upper districts. Introduced. — Stem 2° - 3° high.

3. **V. Lychnitis,** L. Plant mealy-white; stem branching and angled above; leaves ovate, acute, sessile; the lowest narrowed into a petiole, greenish above; flowers in a pyramidal panicle, yellow; filaments bearded with white hairs. — In Carolina, *Muhlenberg*. Introduced.

2. SCROPHULARIA, L. FIGWORT.

Calyx 5-parted. Corolla globose or oblong, 5-cleft; the 4 upper lobes erect, with the two uppermost longer; the lowest spreading. Stamens 4, declined; the fifth sterile and scale-like, placed near the orifice of the tube of the corolla: anther cells transverse and confluent into one. Capsule many-seeded. — Tall herbs, with opposite leaves, and greenish purple flowers in loose cymes, forming a narrow panicle.

1. **S. nodosa,** L. Smooth; stem 4-sided; branches elongated, spreading; leaves ovate or oblong, or the uppermost lanceolate, acute, serrate, rounded or cordate at the base; flowers small. — Shady banks and thickets. Sept. — Stem 2° - 5° high.

3. CHELONE, Tourn. SNAKE-HEAD.

Calyx 5-parted or 5-sepalous, bracted. Corolla inflated-tubular, contracted at the throat, bilabiate; the upper lip concave, emarginate; the lower obtusely 3-lobed, woolly in the throat. Stamens 4, with the filaments and cordate anthers woolly, and a fifth sterile one shorter than the others. Seeds imbricated, broadly winged. — Smooth perennial herbs, with opposite serrate leaves, and large white or purple flowers in short dense bracted spikes.

1. **C. obliqua,** L. Stem mostly simple, 2° high; leaves large (2′ – 5′ long), thin, oblong-ovate, coarsely serrate, tapering into a short petiole; corolla 1½′ long, bright rose-color. — Wet banks, chiefly in the upper districts. Sept.

2. **C. glabra,** L. Stem simple or branched; leaves lanceolate, finely serrate, acute or acuminate, on very short petioles; spike terminal, simple or branched; corolla white. — Wet banks of streams, rare in the lower districts. Sept. — Stem 2° high. Leaves 2′ – 4′ long, sometimes pubescent beneath. Corolla 1′ long.

3. **C. Lyoni,** Pursh. Stem simple or branched; leaves ovate or ovate-oblong, rounded or cordate at the base, acuminate, serrate, conspicuously petioled, mostly pubescent on the veins beneath; flowers purple. — Mountains of North Carolina. Sept. — Stem 2° – 3° high. Leaves 4′ – 6′ long, thinner, and the flowers smaller than in the preceding.

4. PENTSTEMON, L'Her.

Calyx 5-parted. Corolla inflated-tubular, or somewhat bell-shaped, open at the throat, bilabiate; the upper lip rounded, concave, emarginate or 2-lobed; the lower 3-lobed. Stamens 4, declined at the base, and a fifth sterile one as long as the others, and commonly bearded above. Capsule 2-valved, many-seeded. Seeds wingless. — Erect perennial herbs, with opposite leaves, and white or purple flowers in axillary and terminal cymes, forming a close or open narrow terminal panicle.

* *Leaves pinnately divided.*

1. **P. dissectus,** Ell. Smooth or minutely pubescent; divisions of the leaves linear, obtuse, entire or sparingly lobed; cymes few-flowered, long-peduncled; corolla somewhat bell-shaped, with rounded and nearly equal lobes; anther cells smooth, spreading; sterile stamen bearded at the apex. — Dry soil in the middle districts of Georgia. — Stem 2° high, slender. Calyx lobes small, acute. Corolla 9″ – 10″ long, purple.

* * *Leaves undivided.*

2. **P. pubescens,** Solander. Pubescent or smooth; leaves lanceolate, acute, serrate or entire, sessile or clasping; the lowest ovate or oblong, tapering into a slender petiole; cymes spreading, few-flowered; tube of the corolla gradually dilated above the middle; lower lip longer than the upper; anthers smooth. — Dry open woods and fence-rows. June – July. — Stem 2° high. Lowest leaves 3′ – 5′ long. Corolla 1′ long, pale purple.

3. **P. lævigatus,** Soland. Smooth or nearly so; stem leaves ovate-lanceolate, serrate or entire, clasping; the lowest oblong, narrowed into a petiole; cymes few-flowered, spreading, forming a narrow panicle; tube of

the corolla abruptly dilated near the base; the lips nearly equal. — Dry soil, Georgia, Florida, and westward. July. — Stem 2° high. Corolla 9″ - 12″ long, white or pale purple.

Var. **multiflorus,** Benth. Larger (3° - 4°) high; leaves thicker; cymes many-flowered, forming a large spreading panicle; corolla smaller. — Pine barrens, Florida.

5. LINARIA, Juss. TOAD-FLAX.

Calyx deeply 5-parted. Corolla personate, spurred at the base; the upper lip emarginate or 2-lobed; the lower 3-lobed; the throat commonly closed by the prominent palate. Stamens 4, didynamous. Capsule globose or ovoid, opening at the apex, with few or several tooth-like valves, many-seeded. — Herbs, with alternate or (on the radical branches) opposite or whorled leaves, and axillary or racemose flowers.

* *Stems with prostrate branches at the base, which bear broader opposite or whorled leaves.*

1. **L. Canadensis,** Spreng. Smooth; stem erect, slender, mostly simple; leaves linear, flat; those on the radical branches oblong; racemes straight; pedicels erect, as long as the calyx; lobes of the small (3″ - 4″) blue and white corolla rounded; spur filiform, curved, as long as the pedicels. — Cultivated ground, common. April - May. ② — Stem 1° - 2° high.

2. **L. Floridana,** Chapm. Stem smooth, ascending, paniculately much branched; leaves fleshy, terete, linear or club-shaped; those on the radical branches obovate; racemes flexuous, glandular-hairy; pedicels spreading, 3 - 4 times as long as the calyx; lobes of the small (2″) blue corolla truncate or emarginate; spur very short. — Sandy coast, Florida. April - May. ② — Stem 3′ - 12′ high.

* * *Prostrate branches none.*

3. **L. vulgaris,** Miller. Smooth; stem erect, simple or branched; leaves alternate, linear or linear-lanceolate, crowded; raceme dense; flowers large (1′ long), yellow; spur subulate; seeds flattened, margined. — Waste places. Naturalized. ♃ — Stem 1° - 3° high.

4. **L. Elatine,** Miller. Hairy; stem prostrate, slender, branching; leaves small, ovate and hastate; the lowest sometimes opposite and toothed; pedicels axillary, filiform, commonly longer than the leaves; flowers small, yellow and purplish; calyx lobes lanceolate, acute. — Waste places. Naturalized. ① — Stem 4′ - 12′ long.

6. MIMULUS, L. MONKEY-FLOWER.

Calyx tubular, 5-angled, sharply 5-toothed. Corolla bilabiate; the upper lip 2-lobed, erect or reflexed; the lower 3-lobed, spreading. Stamens 4, didynamous: anther cells somewhat confluent. Stigma ovate, 2-lipped. Capsule loculicidally 2-valved, many-seeded. — Erect smooth perennial herbs, with opposite leaves, and axillary purple flowers.

1. **M. ringens,** L. Stem compressed, 4-angled, the angles wingless; leaves oblong or lanceolate, denticulate, cordate and clasping at the base;

peduncles longer than the flowers. — Swamps in the upper districts. August. — Stem 1° – 2° high. Leaves thin, 2′ – 4′ long. Corolla showy, the palate greenish and pubescent.

2. **M. alatus,** Ait. Stem square, with winged angles; leaves oblong-ovate, acuminate, serrate, tapering at the base into a petiole; peduncles shorter than the flowers — Swamps. July – August. — Stem 2° high. Leaves 2′ – 5′ long. Calyx teeth small.

7. HERPESTIS, Gærtn.

Calyx 5 parted; the 3 outer lobes, especially the upper one, broader. Corolla bell-shaped, 5-lobed or bilabiate, with the upper lip 2-lobed or emarginate, the lower 3-lobed. Stamens 4, didynamous: anther cells contiguous or divaricate. Style dilated and flattened at the apex. Capsule 2-valved, many-seeded. — Low herbs, with opposite leaves. Flowers opposite, axillary, or in leafy terminal racemes.

* *Stems 4-angled: leaves serrate: peduncles 2-bracted at the base: exterior calyx lobes oblong: corolla white.*

1. **H. nigrescens,** Benth. Smooth; stem erect, simple or branched; leaves oblong or oblong-obovate, rather obtuse, serrate above the middle; lower peduncles as long as the leaves, the upper much longer; tube of the corolla striped with blue; the upper lip rounded. — Low ground. August – Sept. — Stem 1° – 1½° high. Leaves 1′ – 2′ long.

2. **H. chamædryoides,** HBK., var. **peduncularis,** Gray. Smooth; stem decumbent, diffuse, creeping near the base; leaves small, obovate-oblong, entire near the base; peduncles filiform, 3 – 4 times as long as the leaves. — Key West. — Stems 6′ – 12′ long. Leaves 4″ – 6″ long. Flowers smaller than in No. 1.

* * *Stems terete, succulent, creeping: leaves ovate or roundish, entire: exterior calyx lobes cordate or ovate: peduncles 2-bracted at the apex.*

3. **H. Monniera,** Kunth. Smooth; stems creeping; leaves fleshy, wedge-obovate; corolla bell-shaped, with the rounded lobes nearly equal; peduncles as long as the flowers; exterior calyx lobes ovate. — Ditches and muddy banks along the coast. June – Sept. ♃ — Stem 1° – 2° long. Leaves 1′ long. Corolla white or pale blue.

4. **H. amplexicaulis,** Pursh. Stem villous, ascending from a creeping base; leaves smoothish, ovate, cordate and clasping, obtuse; peduncles shorter than the flowers; exterior calyx lobes cordate; base of the ovary surrounded by a 12-toothed disk. — Pine barren ponds in the lower districts. July - Sept. ♃ — Flowering stems 6′ – 8′ high. Leaves ½′ long, crowded. Flowers blue. Plant odorous.

5. **H. repens,** Cham. & Schlect. Smooth, or the summit of the creeping stems pubescent; leaves oval, clasping; peduncle about as long as the flower; exterior calyx lobes oval or slightly cordate, reticulate-veiny, nearly as long as the white corolla. (H. micrantha, *Ell.*) — Banks of the Ogeechee River, Georgia (*Elliott*).

6. **H. rotundifolia,** Pursh. Stem smoothish, creeping; leaves round-obovate, clasping ($\frac{1}{2}'$ - 1′ long); peduncle longer than the flower; exterior calyx lobes ovate. — Tennessee (*Gattinger*).

8. CONOBEA, Aublet.

Calyx 5-parted. Corolla obscurely 2-lipped, the upper lip 2-lobed, the lower one 3-parted. Stamens 4, all fertile; anthers approximate in pairs, the cells parallel. Style 2-lobed. Capsule ovoid or globular, many-seeded. — Low herbs, with opposite leaves, and small axillary flowers.

1. **C. multifida,** Benth. Annual, much branched, pubescent, 3′ - 8′ high; leaves pinnately divided into linear toothed lobes; corolla pale purple, barely longer than the calyx; capsule ovoid. — Upper Georgia, and westward. July.

9. GRATIOLA, L. Hedge Hyssop.

Calyx 5-parted, the lobes nearly equal, narrow. Corolla bilabiate, with the upper lip entire or emarginate, the lower 3-cleft. Fertile stamens 2, included, the anterior ones sterile or wanting. Stigma 2-lipped. Capsule 4-valved, many-seeded. — Low perennial herbs, with opposite leaves, and solitary axillary white or yellow flowers. Calyx mostly 2-bracted.

* *Connective of the anthers dilated, the cells transverse: stems tender: flowers peduncled.*

+- *Sterile stamens minute or none.*

1. **G. Virginiana,** L. Stem branching, glandular-pubescent above; leaves lanceolate, sparingly serrate, sessile; peduncles slender, the upper ones longer than the leaves; corolla white, with the yellowish tube twice as long as the calyx; capsule ovate, acute. — Muddy banks and ditches. April - May. — Stem 6′ - 12′ high. Leaves 1′ long. Corolla 5″ - 6″ long, hairy within.

2. **G. Floridana,** Nutt. Stem simple or branched, smooth; leaves lanceolate or oblong, entire or nearly so, sessile, the lowest slightly petioled; peduncles filiform, longer than the leaves; lobes of the corolla emarginate, white; the slender yellowish tube three times as long as the calyx; capsule globose. — Muddy banks, Florida to Tennessee. April. — Stem 1° high. Leaves 1′ long. Corolla 8″ long.

3 **G. sphærocarpa,** Ell. Smooth; stem thick, ascending, branching at the base; leaves oblong, serrate above, sessile; peduncles thick, shorter than the leaves; corolla white, the tube twice as long as the calyx; capsule globose. — Springs and branches, Florida to South Carolina, and westward. March - May. — Stem 4′ - 12′ high. Leaves 1′ long. Corolla $\frac{1}{2}'$ long.

+- +- *Sterile stamens manifest.*

4. **G. macrantha,** n. sp. Glabrous; stem ascending from a creeping base, branching, 5′ - 10′ high, few-flowered; leaves membranaceous, obovate-oblong, or oblanceolate, obtuse, entire, sessile or short-petioled, 1′ - $1\frac{3}{4}'$ long, mostly shorter than the filiform peduncles; calyx lobes linear, obtuse, shorter than the spatulate bracts; corolla white, 6″ - 9″ long; sterile stamens conspicuous. — Cool springs near Quincy, Middle Florida. May - June.

5. **G. viscosa,** Schwein. Viscid-pubescent; stem ascending; leaves ovate-lanceolate, serrate, clasping, 3-nerved; peduncles as long as the leaves; corolla white, bearded within; calyx lobes lanceolate, much longer than the small globose capsule. — Ditches and muddy places in the upper districts. June – August. — Stem 6′ – 12′ high. Leaves ½′ long. Corolla 5″ – 6″ long. Bracts wider than the calyx lobes.

6. **G. Drummondi,** Benth. Viscid puberulent; stem decumbent at the base, ascending; leaves lanceolate, acute, sparingly serrate, 3-nerved, clasping bracts and calyx lobes subulate, much longer than the capsule. — With the preceding.

7. **G. ramosa,** Walt. Pubescent and somewhat viscid; stem simple or branched; leaves lanceolate, sessile, 4-toothed; peduncles mostly longer than the leaves; corolla yellowish white; capsule small, globose, much shorter than the linear unequal calyx lobes; bracts minute. — Margins of pine barren ponds, Florida to South Carolina, and westward. June – August. — Stem 4′ – 6′ high. Leaves ½′ long. Corolla 5″ long.

8. **G. aurea,** Muhl. Smooth; stem decumbent, creeping, the flowering branches ascending, 4-angled; leaves sessile, oblong-lanceolate, slightly serrate; peduncles as long as the leaves, or the upper ones longer; bracts as long as the calyx; corolla bright yellow. — Wet pine barrens in the lower districts of Georgia and South Carolina. April – June. — Stem 1° – 2° long. Leaves ½′ – 1′ long. Corolla 6″ long.

9. **G. officinalis,** L. Smooth; stem erect, 4-angled above; leaves lanceolate, serrulate or entire, slightly clasping; peduncles shorter than the leaves; corolla whitish, striped with red, bearded with yellow hairs within; capsule acute, as long as the calyx. — Southern States (*Leconte*), probably introduced. — Stem 1° – 2° high. Corolla 8″ – 10″ long.

* * *Connective of the anthers not dilated; the cells vertical: stems rigid, hairy: flowers sessile: sterile stamens manifest.*

10. **G. pilosa,** Michx. Hirsute; stem erect, simple or branching at the base; leaves ovate or roundish, sparingly toothed, sessile or slightly clasping; corolla tubular, white, scarcely longer than the calyx. — Low ground. June – August. — Stem 8′ – 16′ high. Leaves ½′ long. Corolla 4″ long.

11. **G. subulata,** Baldwin. Shrubby, hispid; stem much branched; leaves linear, entire, the margins revolute; calyx lobes subulate, unequal; corolla salver-shaped; the slender curved tube three times as long as the calyx, hairy within; capsule acute. — Low sandy pine barrens, Florida, near the coast. July – Sept. — Stem 3′ – 6′ long. Leaves 3″ – 6″ long. Corolla 6″ long.

10. ILYSANTHES, Raf.

Calyx 5-parted, bractless. Corolla bilabiate; the upper lip short, erect, 2-cleft; the lower larger, spreading, 3-cleft. Fertile stamens 2, included; the two anterior ones sterile, 2-lobed, with one of the lobes tipped with a gland, the other smooth, acute. Capsule ovate or oblong, as long as the calyx. — Smooth annuals, growing in wet or muddy places. Stems 4-angled. Leaves opposite. Peduncles axillary, often reflexed in fruit. Flowers small, purplish.

1. **I. grandiflora,** Benth. Stem simple, ascending from the creeping base, very leafy; leaves roundish, entire, nerveless, partly clasping; peduncles 2 – 3 times as long as the leaves; sterile stamens lobed at the middle. — Margins of pine barren ponds, Georgia and Florida. — Leaves 3″ – 4″ long. Corolla 3″ – 4″ long.

2. **I. gratioloides,** Benth. Stem erect, at length diffusely branched; leaves lanceolate, oblong, or ovate; the lowest narrowed into a petiole, the upper sessile, acute, obscurely toothed or entire; lower peduncles mostly shorter than the leaves, the upper much longer, spreading; corolla pale blue; capsule oblong, acute, scarcely longer than the calyx. — Springs and rivulets, common. May – Sept. — Stem 6′ – 12′ long. Leaves ½′ – 1′ long. Corolla 3″ – 4″ long.

3. **I. refracta,** Benth. Stem erect, very slender, forking; radical leaves tufted, oblong, obtuse, entire, narrowed at the base; the others remote, small, lanceolate, sessile; peduncles filiform, many times longer than the leaves, reflexed in fruit; corolla pale blue variegated with purple; capsule oblong-linear, twice as long as the calyx. — Springs and muddy banks of rivulets in the middle and upper districts. July – Sept. — Stem 6′ – 12′ high. Radical leaves 1′ long. Corolla 3″ – 4″ long.

4. **I. saxicola,** Chapm. Stems clustered, leafy, simple or sparingly branched; leaves oblong, sessile; the radical ones narrowed into a petiole; peduncles rather stout, 3 – 4 times as long as the leaves; capsule ovoid, rather longer than the calyx. (Lindernia, *M. A. Curtis.*) — On rocks at Tolula Falls, Georgia, and Cherokee, North Carolina (*Curtis*). Aug. ♃? — Stems 3′ – 5′ high. Stem leaves 2″ – 4″ long. Corolla 4″ long.

11. MICRANTHEMUM, Michx.

Calyx 4-parted, or 4-cleft. Corolla somewhat bilabiate; the upper lip shorter, entire; the lower 3-lobed, with the middle lobe longer. Stamens 2, included; the filaments with a gland-like appendage at the base: anther cells diverging. Style short: stigma capitate. Capsule 2-valved, few-seeded; the delicate partition vanishing at maturity. Seeds oblong, reticulate. — Small smooth perennial herbs with creeping or floating stems, opposite entire leaves, and minute axillary white flowers.

1. **M. orbiculatum,** Michx. Stems creeping or floating, freely branched, 3′ – 12′ long; leaves yellowish, orbicular, nearly sessile, 2″ – 4″ wide; flowers opposite or alternate, nearly sessile; corolla equally 4-lobed, or the upper lip short or rudimentary. — Ponds and muddy banks in the lower districts. June – August.

2. **M. Nuttallii,** Gray. Stems creeping or erect, 1′ – 2′ high; leaves obovate, 2″ – 3″ long; flowers alternate, the calyx as long as its pedicel; upper lip of the corolla obsolete, the middle lobe of the lower linear. — Muddy banks near the coast. August – Oct.

Var.? **glomeratum.** Stems erect and tufted, 1′ – 3′ high, or long (6′ – 12′) and floating; leaves opposite, or 3 – 4 in a whorl, oblong-linear; flowers mostly in a terminal cluster, the top-shaped calyx longer than its pedicel. — Rivers and wet banks, South Florida.

12. AMPHIANTHUS, Torr.

Calyx 5-parted. Corolla somewhat funnel-shaped, 4-cleft; the upper and lower lobes rather longer. Stamens 2: anther cells distinct. Style minutely 2 cleft at the apex, acute. Capsule obcordate, compressed, loculicidal. Seeds oblong, rugulose. — A very small annual, with the linear obtuse leaves clustered at the summit of the short stem, and minute white flowers, some of which are borne on short naked recurved peduncles from the axils of the leaves, and others on a slender (1′ long) terminal 2-bracted scape.

1. **A. pusillus,** Torr. — In shallow excavations of flat rocks, Newton County, Georgia (*Dr. Leavenworth*). March – April.

13. VERONICA, L. SPEEDWELL.

Calyx 4 – 5-parted. Corolla wheel-shaped, or salver-shaped, 4 – 5-lobed. Stamens 2, one each side the upper lobe of the corolla. Stigma capitate. Capsule compressed and obcordate, or oblong and obtuse, septicidal or loculicidal. Seeds few or many, flattened or concave on the inner face. — Chiefly herbs, with the stem leaves opposite or whorled, the floral ones alternate. Flowers small, axillary, racemed or spiked, blue or white.

* *Leaves whorled: corolla tubular: capsule oblong.*

1. **V. Virginica,** L. Perennial, smooth or pubescent; stem tall, erect; leaves 4 – 7 in a whorl, lanceolate, serrate, short-petioled; flowers very numerous, crowded in axillary (whorled) and terminal spikes; stamens long-exserted; corolla white or purple. — Mountain meadows, Georgia, and northward. June – August. — Stem 2° – 4° high. Leaves 2′ – 4′ long.

* * *Stem leaves opposite: corolla wheel-shaped: capsule obcordate.*

+ *Flowers in axillary racemes.*

2. **V. officinalis,** L. Perennial, pubescent; stem prostrate, rooting at the base; leaves obovate-elliptical, or wedge-oblong, obtuse, serrate, short-petioled; racemes alternate, densely many-flowered; corolla blue. — Mountains of North Carolina. July. — Stem 6′ – 12′ long. Racemes 2′ – 4′ long.

3. **V. Anagallis,** L. Stem erect from a creeping base; leaves sessile, oblong-lanceolate, acute, entire or slightly serrate; racemes loosely many-flowered; capsule orbicular. — In springs and branches, Tennessee. June. — Stem 1° – 1½° high. Flowers blue.

+ + *Flowers scattered, in leafy terminal racemes, or axillary.*

4. **V. serpyllifolia,** L. Perennial, smoothish; stem ascending, diffusely branched; leaves oval or roundish, crenate, short-petioled, the floral ones lanceolate and entire; pedicels as long as the calyx; corolla blue. — Low pastures in the upper districts. May – Sept. — Stem 4′ – 6′ long. Leaves 4″ – 6″ long.

5. **V. peregrina,** L. Annual, smooth; stem erect, simple or branched leaves sessile, oblong, toothed; the lowest narrowed into a petiole; the floral ones entire; peduncles shorter than the calyx; corolla white, minute. — Cultivated ground, very common. April – June. — Stem 2′ – 12′ high. Leaves ½′ – 1′ long.

6. **V. arvensis,** L. Annual, hairy; stems ascending, branched at the base; leaves ovate, obtuse, crenate, petioled; the floral ones lanceolate, entire, sessile; flowers nearly sessile; corolla pale blue. — Cultivated ground. Introduced. May – June. — Stems 6′ – 12′ high. Leaves 4″ – 6″ long.

7. **V. agrestis,** L. Annual, pubescent; stems prostrate, diffusely branched; leaves all petioled, ovate, coarsely serrate; peduncles much longer than the calyx, recurved in fruit; corolla blue, striate. — Cultivated ground. Introduced. Feb. – May. — Stem 6′ – 12′ long. Leaves 6″ – 9″ long. Fruiting calyx much enlarged.

14. CAPRARIA, L.

Calyx 5-parted, equal. Corolla bell-shaped, equally 5-lobed smooth within. Stamens 4 – 5: anthers sagittate. Style slender: stigma thick, ovate, at length 2-lobed. Capsule coriaceous, ovate, septicidally 2-valved, the valves 2-cleft at the apex. Seeds numerous, reticulate. — Perennial herbs, or shrubby plants. Leaves alternate, serrate. Peduncles axillary, single or by pairs, mostly 1-flowered.

1. **C. biflora,** L. Shrubby, smooth or pubescent; stem erect, branching; leaves lanceolate or oblong, sharply serrate, narrowed and entire below the middle; peduncles filiform, mostly by pairs, shorter than the leaves; calyx lobes linear; corolla deeply 5-cleft; stamens 5, included. — South Florida. Nov. — Stem 2° – 3° high. Leaves 1′ – 1½′ long. Flowers white?

15. SCOPARIA, L.

Calyx 4 – 5-parted. Corolla wheel-form, 4-cleft, hairy in the throat. Stamens 4. Style club-shaped at the apex. Capsule septicidally 2-valved, the valves membranaceous, entire. Seeds numerous, reticulate. — Herbaceous or shrubby plants, with opposite or whorled leaves. Peduncles axillary, commonly by pairs, 1-flowered.

1. **S. dulcis,** L. Annual, smooth; leaves lanceolate or oblong, toothed, mostly three in a whorl, much longer than the peduncles; calyx lobes oblong; flowers small, white. — South Florida. — Stem 1° – 3° high. Leaves ½′ – 1½′ long.

16. HYDRANTHELIUM, HBK.

Calyx 4-parted. Corolla short-funnel-shaped, 3-cleft. Stamens 3, inserted on the throat of the corolla. Style 2-lobed. Capsule many-seeded. — Aquatic herbs, with the habit of Callitriche. Leaves opposite. Peduncles axillary, 1-flowered.

1. **H. Egense,** Poepp. Floating; stem filiform, branching; lower leaves small (2″ or 3″ long), distant, oblong, the upper ones crowded, obovate; calyx lobes ovate-lanceolate. — New Orleans (*Dr. Hale*). Introduced?

17. BUCHNERA, L.

Calyx tubular, 5-toothed. Corolla salver-shaped, 5-lobed, the lobes wedge-obovate. Stamens 4, didynamous, included: anthers 1-celled. Style simple, club-shaped at the apex. Capsule coriaceous, straight, loculicidally 2-valved, the valves entire. Seeds numerous, reticulate. — Rough herbs, turning black in withering. Leaves opposite, toothed or entire; the uppermost small, and passing into the bracts of the many-flowered spike. Flowers blue.

1. **B. elongata,** Swartz. Rough, with short rigid hairs; stem mostly simple; leaves entire or slightly toothed, 1-nerved, or obscurely 3-nerved; the lowest obovate or obovate-oblong, obtuse; the uppermost distant, acute; spikes interrupted, long-peduncled; flowers opposite or alternate. — Low pine barrens, Florida, Georgia, and westward. July – August. — Stem 1° – 2° high. Corolla 4‴ – 5‴ long.

2. **B. Americana,** L. Very rough, with bristly hairs; stem often branching above; leaves prominently 3-nerved, mostly toothed; the lower oblong, obtuse, the others lanceolate, acute; calyx teeth acuminate. — Low woods in the upper districts. July – August. — Stem 2° – 3° high. Corolla 6‴ – 7‴ long.

18. SEYMERIA, Pursh.

Calyx 5-parted. Corolla bell-shaped, 5-lobed, the lobes oblong. Stamens 4, equal, the filaments woolly; anthers oblong, opening at the apex, awnless. Style simple, obtuse. Capsule ovate, flattened above, loculicidally 2-valved. Seeds numerous, covered by the loose hyaline testa. — Chiefly annuals. Stems erect, branching. Leaves opposite, pinnately divided. Flowers yellow, in terminal leafy-bracted racemes.

1. **S. tenuifolia,** Pursh. Smooth or nearly so; stem with elongated erect-spreading branches; leaves pinnate, the divisions filiform; capsule smooth, acute at the base, shorter than the pedicel. — Low pine barrens. August – Sept. — Stem 2° – 4° high.

2. **S. pectinata,** Pursh. Viscid-pubescent; stem with ascending branches; leaves pinnatifid, the divisions oblong-linear; capsule hairy, obtuse at the base, as long as the pedicel. — Dry sandy soil, Florida to South Carolina, and westward. July – Sept. — Stem 6′ – 18′ high.

3. **S. macrophylla,** Nutt. Tall and stout (4° – 5° high), more or less pubescent, branching; leaves large (6′ – 8′ long), deeply pinnatifid, the ovate or lanceolate lobes toothed or pinnatifid, the floral ones entire; racemes short, dense; tube of the corolla longer than the lobes of the calyx, woolly within. — Mountains of Georgia, Tennessee, and northward.

19. MACRANTHERA, Torr.

Calyx 5-cleft, the lobes elongated. Corolla cylindrical, 5-toothed; the teeth reflexed. Stamens 4, equal, long-exserted, woolly: anthers large, oblong, approximate. Style simple, filiform, elongated: stigma minute, flat. Capsule ovate, loculicidally 2-valved, many-seeded. — A tall biennial, with pinnatifid opposite leaves, and showy orange-colored flowers, in terminal leafy racemes.

1. **M. fuchsioides,** Torr. Smoothish; stem branching, 4-sided; earliest leaves ovate-oblong, entire; those of the stem lyrate-pinnatifid; the uppermost toothed-serrate; pedicels recurved, the flowers erect; calyx lobes lanceolate, denticulate, rather shorter than the corolla. — Var. LECONTEI has the shorter and narrower lobes of the calyx entire. (M. Lecontei, *Torr.*) —

Marshy banks of pine barren streams, Georgia, Florida, and westward. Sept.–Oct. — Stem 3° – 5° high. Earliest leaves 6′ – 8′ long; those of the stem 2′ – 4′ long. Corolla 9″ – 12″ long. — The plant turns black in drying.

20. OTOPHYLLA, Benth.

Calyx deeply 5-cleft; the lobes leafy, unequal. Tube of the corolla dilated upward, sparse-hairy within, the lobes broad and entire. Stamens 4, didynamous, included: anthers oblong, awnless; those of the shorter stamens much smaller. Style elongated, dilated and flattened at the apex, entire. Capsule sub-globose, loculicidally 2-valved, many-seeded.

1. **O. Michauxii,** Benth. Hairy; stem erect, simple; leaves opposite, lanceolate, entire, sessile; the upper ones mostly 2-eared at the base; flowers opposite, in a leafy spike. — Low ground, Tennessee, North Carolina, and northward. August. ① ? — Stem rigid, 2° high. Leaves 1′ – 2′ long. Corolla 9″ – 12″ long, purple.

21. DASYSTOMA, Raf. False Foxglove.

Calyx bell-shaped, 5-cleft, the lobes often toothed. Corolla tubular-bell-shaped, woolly within, 5-lobed, the lobes rounded. Stamens 4, didynamous: anthers oblong; the cells parallel and awned at the base. Style filiform, thickened and slightly 2-lobed at the apex. Capsule ovate, acute, loculicidally 2-valved, many-seeded. — Tall herbs, with opposite ovate or oblong mostly pinnately divided or lobed leaves, and large yellow flowers in a leafy raceme. Filaments woolly.

1. **D. pubescens,** Benth. Pubescent; leaves oblong, obtuse, entire, or the lowest pinnatifid; calyx longer than the pedicel, with oblong obtuse lobes. (Gerardia flava, *L.*) — Dry woods in the upper districts. July – Sept. ♃ — Stem 2° – 4° high, mostly simple. Leaves narrowed into a short petiole. Corolla 1½′ long.

2. **D. quercifolia,** Benth. Smooth and glaucous; stem simple or branched; lowest leaves twice-pinnatifid; the others pinnatifid, or the uppermost lanceolate and entire; calyx shorter than the pedicel, with lanceolate or subulate acute lobes. (Gerardia, *Pursh.*) — Rich woods and river banks. July – Sept. ♃ — Stem 3° – 6° high. Lobes of the leaves toothed. Corolla 2′ long.

3. **D. Drummondii,** Benth. Closely pubescent; stem branching; lower leaves ovate-lanceolate, pinnatifid, the upper ones dentate or serrate; calyx mostly longer than the pedicel, the broadly lanceolate lobes as long as the top-shaped tube. — Mountains of Georgia, Tennessee, and westward. — Stem 2° – 3° high. Corolla 1½′ long.

4. **D. lævigata,** Raf. Smooth, or nearly so, slender, sparingly branched; lowest leaves mostly pinnately lobed and toothed, the others lanceolate, entire; calyx longer than the pedicel, the lobes shorter than the tube; corolla funnel-shaped (1′ long). — Mountains of Georgia, and northward.

5. **D. patula,** Chapm. Stem tall (3° – 4°) and slender, widely branched; lower leaves pinnately lobed and toothed, the upper ones oblong, entire; ped-

icels long (1′-1½′), spreading or recurved; calyx lobes rather longer than the tube, entire; corolla 1½′ long. — Mountains of Georgia and Tennessee. August.

6. **D. pedicularia,** Benth. Smooth or somewhat pubescent; leaves ovate-lanceolate, pinnatifid; the lobes finely toothed; flowers opposite; calyx shorter than the pedicel; the toothed lobes as long as the tube. — Dry sandy soil, chiefly in the upper districts. July-August. — Stem 2° high, much branched. Leaves about 2′ long, the lobes numerous and short. Corolla 12″-15″ long, with a rather slender tube and short lobes.

7. **D. pectinata,** Benth. Pubescent or somewhat villous; leaves lanceolate or ovate-lanceolate, finely pinnatifid and toothed, the earliest ones entire; flowers alternate; calyx longer than the pedicel; the pinnatifid lobes longer than the tube. — Dry pine barrens, Florida to North Carolina. August-Sept. ② — Stem 2°-4° high, widely branched. Corolla 1½′ long, with a wider tube and larger lobes than the last.

22. GERARDIA, L.

Calyx bell-shaped, 5-toothed; the teeth short, acute, entire. Corolla tubular-bell-shaped, 5-lobed, the lobes rounded, spreading; the throat oblique. Stamens 4, didynamous, the longer ones commonly woolly: anthers woolly, connivent in pairs; the cells diverging and pointed at the base. Style slender, dilated, and flattened upward. Capsule ovoid or globose, smooth, loculicidal. Seeds numerous, angled, reticulated. — Chiefly slender branching annuals. Leaves opposite, or rarely alternate, narrow, entire. Flowers in the axils of the upper leaves, showy, purple; the tube of the corolla mostly dotted with red and yellow, often woolly at the throat.

* *Perennial.*

1. **G. linifolia,** Nutt. Smooth; branches elongated, erect; leaves erect, linear; peduncles as long as the leaves, or the uppermost longer; calyx truncate, with minute teeth; lobes of the corolla nearly equal; capsule large (3″ wide), globose. — Low pine barrens, Florida to North Carolina, and westward. Sept. — Stem 2°-3° high. Leaves 1′ long. Corolla 1′ long, pubescent.

* * *Annuals.*

+- *Corolla small, the 2 upper lobes short, truncate and erect.*

2. **G. divaricata,** Chapm. Stem 6′-12′ high, smooth, widely branched from the base; leaves all opposite, spreading or reflexed, filiform, roughish on the margins, ¾′ long, the uppermost minute; pedicels setaceous, spreading, the upper ones 4-5 times as long as the leaves; calyx teeth subulate; corolla ½′ long; capsule ovoid. — Low sandy pine barrens, West Florida. Sept.

3. **G. filicaulis,** Chapm. Stem 6′-12′ long, filiform, reclining, smooth and glaucous; branches alternate, setaceous; leaves minute, 1″ long, subulate; flowers few, terminal; calyx teeth triangular; corolla 4″ 3″ long, compressed; capsule globose. — Low grassy pine barrens, West Florida. Sept.

+- +- *Lobes of the corolla nearly equal, spreading.*

++ *Pedicels as long, or twice as long, as the calyx, shorter than the leaves (except No. 4).*

4. **G. aphylla,** Nutt. Stem 2°-3° high, smooth, 4-angled, sparingly branched near the summit; leaves minute, 1″ long, subulate, appressed; flowers

mostly alternate, on one side of the spreading branches; pedicel as long as the calyx; calyx teeth minute, obtuse; corolla ½′ long, hairy within, the upper lobes reflexed; capsule globose, 2″ long. — Low sandy pine barrens, Florida to North Carolina, and westward. Sept.

5. **G. purpurea,** L. Stem 1° - 3° high, smooth, the branches elongated; leaves opposite, broadly or narrowly linear, rough above, 1′ - 1½′ long; flowers opposite or nearly so, the stout pedicels as long as the calyx; calyx teeth conspicuous, triangular, spreading; corolla 8″ - 10″ long; capsule globose. — Low ground. Sept.

Var. **fasciculata,** Chapm. Stem taller (3° - 5°), much branched above, rough; leaves rough on both sides, clustered, the uppermost, like the flowers, alternate; calyx teeth more pointed; corolla larger. (G. fasciculata, *Ell.*) — Low ground along the coast, Florida to South Carolina.

6. **G. maritima,** Raf. Smooth; stem 8′ - 16′ high, with numerous short leafy branches near the base; leaves fleshy, linear, obtuse, opposite, the upper ones small and remote; pedicels as long as the calyx and the floral leaves; calyx teeth short, obtuse; corolla 6″ - 8″ long, slightly oblique at the throat; capsule globose. — Salt marshes, Florida, and northward. June - August.

Var. **major.** Stem 2° high, much branched; leaves flat, acute; floral leaves longer than the pedicels; calyx teeth triangular, acute; corolla and capsule larger. — Brackish marshes, coast of Florida. — Corolla 1′ long.

7. **G. setacea,** Walt. Very smooth; stem 1° - 2° high, much branched, slender; leaves 1′ long, setaceous, opposite; pedicels stout, club-shaped, three times as long as the calyx, mostly alternate, or terminating the setaceous peduncle-like branchlets; calyx teeth short, subulate; corolla 1′ long, woolly within, the rounded lobes thickly fringed; capsule ovoid, barely exceeding the calyx. (G. Plukenetii, *Ell.?*) — Dry sandy pine barrens, Florida to South Carolina. Sept.

↠ ↠ *Pedicels much longer than the calyx, commonly longer than the leaves.*

8. **G. tenuifolia,** Vahl. Stem smooth, 1° - 1½° high, much branched; leaves linear, smooth, or rough on the margins, 1′ - 1½′ long; pedicels filiform, about as long as the leaves, opposite; calyx teeth broadly subulate, one fourth as long as the tube; corolla ½′ long; capsule globose, as long as the calyx. — Var. FILIFORMIS. Stem and pedicels rough; leaves filiform, clustered; corolla larger (¾′ long). — Light soil. Sept.

9. **G. filifolia,** Nutt. Stem 1° - 2° high, much branched, smooth; leaves very numerous, all alternate and clustered, smooth, fleshy and somewhat club-shaped; pedicels alternate, twice as long as the leaves; calyx teeth subulate, one fourth the length of the 5-angled tube; corolla ¾′ long; capsule ovoid, as long as the calyx. — Low sandy pine barrens, Georgia and Florida. Sept.

10. **G. Skinneriana,** Wood. Stem rough, striate, 12′ - 18′ high, the slender branches erect; leaves 4″ - 6″ long, opposite or alternate, linear, very rough, rather obtuse; pedicels filiform, 2 - 4 times as long as the minute floral leaves; calyx teeth minute, obtuse; corolla ½′ long, pale purple or white. — Grassy margins of ponds, Florida, and westward. Sept. — Unlike the other species, the color of this remains unchanged in drying.

23. CASTILLEIA, L.

Calyx tubular, compressed, cleft at the summit; the lobes entire or 2-cleft. Tube of the corolla included in the calyx; the upper lip long, narrow, curved, laterally compressed, and enclosing the four didynamous stamens; the lower lip short, 3-lobed: anther cells oblong-linear, unequal; the outer one fixed by the middle, the inner pendulous. Capsule loculicidal, many-seeded. — Herbs, with alternate entire or incisely-lobed leaves, the uppermost colored. Flowers in leafy spikes or racemes.

1. **C. coccinea,** Spreng. Stem hairy; radical leaves clustered, nearly entire; those of the stem pinnatifid, with the lobes linear; the floral ones 3-lobed, bright scarlet at the summit; corolla greenish yellow. — Damp soil in the upper districts. June – August. ② — Stem 1° – $1\frac{1}{2}$° high.

24. SCHWALBEA, L.

Calyx tubular, oblique, 10 – 12-ribbed, 4-toothed, the upper tooth very small, the lowest elongated, 2-cleft. Corolla bilabiate; the upper lip oblong, arched, enclosing the four didynamous stamens; the lower rather shorter, obtusely 3-lobed: anther cells parallel, equal. Capsule oblong, acute, loculicidally 2-valved, many-seeded.

1. **S. Americana,** L. — Sandy pine barrens. May – June. ♃ — Stem simple, 1° – $1\frac{1}{2}$° high, pubescent. Leaves alternate, lanceolate, entire, sessile; the lower ones oblong, the uppermost linear, small. Flowers in a spiked raceme. Corolla 1′ long, yellow and purple.

25. PEDICULARIS, L.

Calyx tubular, more or less cleft at the apex, variously 2 – 5-toothed. Corolla bilabiate; the upper lip compressed, curved and bearded at the apex, enclosing the 4 didynamous stamens; the lower lip 2-crested above, 3-lobed, with the lateral lobes larger and rounded: anthers transverse. Capsule ovate or lanceolate, compressed, the upper portion empty. — Herbs, with finely and pinnately divided leaves. Flowers in leafy racemes or spikes.

1. **P. Canadensis,** L. Stem simple, hairy (6′ – 9′ high); leaves alternate, smooth, oblong or lanceolate, pinnatifid; the lobes oblong, simply or doubly crenate; spike dense, capitate, elongated in fruit; corolla pale yellow and purple; the upper lip hooked, 2-awned under the apex; capsule lanceolate, exserted. — Shady woods and banks. — March – April. ♃ — Stem bearing slender leafy rooting runners. Fruiting spike 3′ – 5′ long.

2. **P. lanceolata,** Michx. Stem tall (1° – 3°), smooth, simple or sparingly branched; leaves nearly opposite, lanceolate, pinnately toothed, the teeth crenate; spike dense; corolla pale yellow, the upper lip curved, awnless, the lower erect; capsule ovate, scarcely exserted. — Swamps on the mountains of North Carolina, and northward. August – Sept.

26. MELAMPYRUM, Tourn.

Calyx bell-shaped, with 4 subulate teeth. Corolla bilabiate; the tube dilated above; the upper lip short, compressed, obtuse, straight; the lower rather longer, spreading, biconvex, with three short lobes. Stamens 4, didynamous, under the upper lip: anthers approximate, oblong, hairy; the cells nearly equal, slightly pointed at the base. Ovary with 2 ovules in each cell. Capsule compressed, oblique, loculicidally 2-valved, 1-4-seeded. — Annual herbs, with opposite lanceolate or linear leaves, and solitary axillary flowers.

1. **M. Americanum,** Michx. Stem naked below, leafy and commonly branched above the middle; leaves lanceolate, entire, short-petioled; the upper ones broader and sharply toothed at the base; flowers greenish yellow. — Dry woods along the mountains, Georgia, and northward. August. — Stem 6′-12′ high. Leaves 2′ long. Flowers 4″-5″ long.

ORDER 91. SOLANACEÆ. (NIGHTSHADE FAMILY.)

Herbs or shrubs, with colorless juice, alternate leaves, and regular axillary or supra-axillary flowers. — Calyx 4-7-cleft, or 4-7-toothed, persistent, often inflated in fruit. Corolla 5-10-lobed, plaited and valvate, convolute, or imbricated in the bud. Stamens 4-7, inserted on the tube of the corolla: anthers 2-celled, opening lengthwise or by terminal pores. Style and stigma single. Fruit a 2-celled (rarely 3-5-celled) many-seeded capsule or berry. Placentæ adnate to the partition and projecting into the cells. Seeds campylotropous or amphitropous. Embryo mostly slender and curved in fleshy albumen. — Chiefly narcotic poisons.

Synopsis.

§ 1. Fruit a berry.

* Corolla wheel-shaped or short bell-shaped.

+ Anthers connivent. Calyx unchanged in fruit.

1. **SOLANUM.** Anthers opening by terminal pores. Berry juicy.
2. **CAPSICUM.** Anthers opening lengthwise. Berry juiceless, or fleshy.

+ + Anthers separate, opening lengthwise. Fruiting calyx inflated.

3. **PHYSALIS.** Berry juicy. Calyx entire at the base.
4. **NICANDRA.** Berry dry. Calyx 10-toothed at the base.

* * Corolla funnel-shaped.

5 **LYCIUM.** Anthers opening lengthwise. Berry juicy. Shrubs.

§ 2. Fruit a capsule.

6. **DATURA.** Calyx prismatic or terete, circumscissile. Capsule spiny.
7. **PETUNIA.** Calyx terete, persistent. Capsule smooth.

1. SOLANUM, L. NIGHTSHADE.

Calyx 5-toothed or 5-cleft. Corolla wheel-shaped, 5-lobed, valvate, with the margins turned inward. Stamens 5, inserted on the throat of the corolla, exserted; the filaments very short: anthers opening by 2 terminal pores, connivent. Stigma obtuse. Berry juicy, 2-celled, many-seeded. — Herbs or shrubs, often armed with prickles. Leaves alternate or in pairs. Flowers opposite the axils, or above them.

* *Unarmed: cymes or racemes corymbed: corolla 5-parted.*

1. **S. nigrum,** L. Herbaceous, mostly pubescent with simple hairs: stem erect, branching; the branchlets wing-angled, and often more or less toothed; leaves petioled, oblong-ovate, toothed or entire; flowers somewhat umbelled, drooping, small, white; berry black. — Around homesteads. July – Sept. — Stem 1° – 3° high, diffuse. Leaves 2′ – 4′ long, when in pairs, unequal. Corolla 4″ – 6″ wide. Berry 2″ – 3″ in diameter.

2. **S. Bahamense,** L. Shrubby, and very rough throughout with short rigid rusty stellate hairs; leaves oblong, entire, acute, tapering into a short petiole; cymes slender, long-peduncled, once or twice forking, many-flowered, longer than the leaves; flowers small, linear in the bud; corolla white, deeply parted, the lobes linear-lanceolate, obtuse; anthers hairy. — South Florida. — Leaves 2′ – 3′ long. Cymes 3′ – 4′ long. Corolla 5″ wide.

3. **S. verbascifolium,** L. Shrubby, and hoary throughout with dense soft stellate hairs; leaves large, ovate-oblong, acute at each end, entire; cymes on long and very stout peduncles, forking, compactly many-flowered; flowers globose-obovate in the bud; calyx lobes ovate, acute; corolla lobes oblong, obtuse; anthers oblong, twice as long as the slender filaments; ovary woolly. — South Florida. Oct. – Dec. — Shrub 4° – 5° high. Leaves 6′ – 9′ long. Corolla ½′ wide.

4. **S. Blodgettii,** Chapm. Stem shrubby? smooth, the branches, like the upper surface of the leaves, roughened with a close stellate (greenish) pubescence; leaves oblong, obtuse, entire, short-petioled, hoary-tomentose beneath, like the many-flowered forking cymes; calyx small, obconical, with short rounded teeth; corolla purple? deeply parted, 3 – 4 times as long as the calyx, with lanceolate acute lobes; anthers nearly sessile, linear, narrowed at the apex, shorter than the style. — South Florida. — Leaves 3′ – 4′ long. Flowers ½′ in diameter.

* * *Prickly: flowers racemed: corolla mostly angularly lobed.*

5. **S. Carolinense,** L. Hirsute with stellate hairs; stems erect; leaves ovate-oblong, angularly lobed or pinnatifid, abruptly contracted into a short petiole; the veins and petiole, like the stem, armed with straight yellow prickles; racemes simple, slender, 3 – several-flowered; calyx lobes acuminate. — Dry waste places. June – Sept. ♃ — Stem 1° – 1½° high. Leaves 3′ – 5′ long. Corolla 9″ – 12″ wide, blue or white. Berry yellow.

6. **S. aculeatissimum,** Jacq. Plant beset throughout with bristly hairs and stout prickles; stem diffusely branched; leaves ovate or oval, membranaceous, acutely lobed or toothed; racemes lateral, slender, 2 – 5-flowered; corolla lobes lanceolate, white; berry globose, yellow. — Waste places. June – Sept. — Stem 1° – 2° high. Leaves 3′ – 6′ long. Corolla 6″ – 9″ wide, the lobes recurved.

7. **S. sisymbriifolium,** Lam. Glandular-villous and prickly; leaves large, deeply pinnatifid, the oblong divisions lobed and toothed; racemes many-flowered; corolla 5-lobed, pale blue; berry globose, partly included in the hispid calyx. — Waste places, Georgia and Florida. Introduced. — Stem 3° – 5° high. Leaves 4′ – 9′ long.

* * * *Fruit included in the calyx: stamens and style declined: anthers tapering upwards, the lowest longer and incurved.*

8. **S. rostratum,** Dunal. Stellate-pubescent and prickly; leaves 1 – 2-pinnatifid, the lobes obtuse; corolla yellow, its lobes short, ovate; calyx prickly. — Georgia, Tennessee, and westward. — Stem 1° – 2° high. Corolla 1′ in diameter.

2. CAPSICUM, Tourn. RED PEPPER.

Calyx cup-shaped, 5 – 7-toothed. Corolla wheel-shaped, 5 – 7-cleft, plaited. Stamens 5 – 7, inserted on the throat of the corolla, exserted: anthers connivent, opening lengthwise. Stigma obtuse. Berry juiceless, partly 2 – 3-celled, many-seeded. — Herbs or shrubs, with acrid juice, solitary flowers, and red berries.

1. **C. frutescens,** L. Shrubby, smooth; stem branching; leaves oblong-ovate, obtuse, entire; calyx obscurely toothed, long-peduncled, erect; berry oblong, shorter than the peduncle. — South Florida. — Stem 1° – 2° high. Leaves 1′ long. Flowers in the forks of the branches. Berry 4″ – 6″ long.

3. PHYSALIS, L. GROUND CHERRY.

Calyx 5-toothed, inflated in fruit, and enclosing the juicy berry. Corolla short-bell-shaped, plaited, 5-lobed or 5-angled. Stamens 5, inserted on the tube of the corolla: anthers separate, opening lengthwise. Stigma obtuse. Seeds flat, kidney-shaped. — Diffusely branching herbs, with alternate petioled leaves, which are often by pairs, and solitary nodding flowers in their axils, or in the forks of the branches. Corolla (in ours) yellow, with mostly a dark brown centre.

* *Annual.*

+ *Corolla pale yellow, 4″ – 6″ broad: anthers purple.*

1. **P. angulata,** L. Smooth throughout; stem sharply 4-angled, erect or at length diffusely branched; leaves oblong-ovate, acuminate, sharply toothed; calyx lobes triangular, as long as the tube; corolla green in the throat; filaments smooth; fruiting calyx globose-ovate, equally 10-angled, reticulated with purple veins, depressed at the base. — Fields and waste ground. — July – Oct. — Stem 1° – 4° long. Leaves 2′ – 3′ long. Fruiting calyx 1′ long.

2. **P. pubescens,** L. Tomentose or villous with soft often viscid hairs; stem diffusely branched, terete; leaves obtusely toothed, or entire, ovate, and mostly slightly cordate and unequal at the base; calyx teeth subulate, twice as long as the tube; corolla brown in the throat; filaments hairy; fruiting calyx oblong-ovate, 5-angled, hollowed at the base. — Fields and waste grounds, common. July – Oct. — Stem 1° – 2° long. Leaves 1′ – 2′ long. Berry red.

3. **P. obscura,** Michx. Smooth or nearly so; stem sharply angled, dividing at the base into numerous long (1° – 3°) procumbent branches; leaves broadly ovate or cordate, acuminate, obtusely toothed; calyx teeth subulate; corolla brown in the throat; filaments smooth; fruiting calyx large, round-ovate, abruptly acuminate, 5-winged, smooth, truncate at the base; berry

ovoid, purple. — Waste ground around homesteads. May – Oct. — Leaves 1′ – 2′ long. Fruiting calyx 1′ – 1¾′ long.

+ + *Corolla yellow, 7″ – 10″ broad.*

4. **P. Philadelphica,** Lam. Smoothish; stem 2° – 3° high, the branches sharply angled; leaves ovate or ovate-lanceolate, acuminate, wavy or toothed on the margins, tapering and very unequal at the base; pedicels as long as the petioles; calyx lobes acuminate; fruiting calyx open, globular, 1′ thick. — Cultivated ground, Georgia, Tennessee, and northward. July – Sept.

* * *Perennial.*

+ *Flowers solitary.*

++ *Pubescence, if any, stellate or branching.*

5. **P. angustifolia,** Nutt. Smooth or nearly so; stem low, erect or at length diffuse; leaves linear to oblong, obtuse, entire; calyx lobes short, triangular-ovate, obtuse, tomentose on the margins; corolla brownish purple in the throat; fruiting calyx round-ovate, depressed at the base. — Low sandy places along the coast, Florida, and westward. July – Sept. — Stem 6′ – 12′ high. Leaves 2′ – 5′ long, somewhat fleshy. Corolla 9″ – 12″ broad. Fruiting calyx 9″ – 12″ long. Anthers yellow.

6. **P. viscosa,** L. Closely pubescent, with short white stellate or branching hairs; stem ascending from a slender subterranean base; leaves from ovate to spatulate-oblong, entire, or wavy on the margins; corolla greenish yellow, brownish in the throat; fruiting calyx globose-ovate; berry yellow, viscid. — Sandy coast, Florida to North Carolina. July – Sept. — Leaves 1½′ – 3′ long. Corolla 8″ – 9″ broad.

++ ++ *Pubescence simple.*

7. **P. lanceolata,** Michx. Pubescent; leaves ovate-lanceolate or oblong, obtuse, entire, or coarsely toothed, acute and commonly very unequal at the base; calyx pubescent, the lobes long-acuminate from an ovate base; corolla yellow in the throat; fruiting calyx conical-ovate, 5-angled. — Dry sandy soil. July – Oct. — Stem 1° high, erect or diffuse. Leaves 1′ – 2′ long. Fruiting calyx 1′ – 1½′ long, smooth or hairy.

8. **P. arenicola,** Kearney. Pubescent or hairy; root slender, elongated; stem erect, at length diffusely branched; leaves ovate, entire or angularly toothed, rounded or cordate at the base; calyx hairy; corolla pubescent, brown in the throat; style and filaments purple; anthers yellow; fruiting calyx oblong-ovate, sharply 5-angled, concave at the base; berry globose. — Dry sandy coast, Florida. July – Sept. — Stem 1° high. Fruiting calyx 1′ long.

9. **P. heterophylla,** Nees. Densely villous with viscid jointed hairs; stem stout, at length diffusely branched; leaves broadly cordate, acute, angularly toothed; calyx teeth shorter than the tube; corolla brownish in the throat; anthers yellow; fruiting calyx ovate, 5-angled, hirsute. — Dry soil, chiefly in the upper districts. June – Sept. — Stem 1° – 1½° high. Leaves 2′ – 4′ long. Corolla 6″ – 8″ broad. Fruiting calyx 1′ – 1½′ long.

Var. **nyctaginia,** Rydberg. Leaves oftener entire, acute at the base, acuminate. — With the type.

+ + *Flowers clustered.*

10. **P. Carpenteri,** Riddell. Stem erect, branching, closely pubescent; leaves thin, obliquely cordate-oblong, or oval, acuminate, entire, or obscurely wavy, slender petioled; flowers small, 3 – 6 in a cluster; berry small; fruiting calyx globose; flowers yellow. — East Feliciana, Louisiana (*Prof. Carpenter*).

4. NICANDRA, Adans.

Calyx 5-parted, inflated, 10-toothed at the base. Corolla bell-shaped, plaited, obscurely 5-lobed. Stamens 5: anthers separate, opening lengthwise. Berry juiceless. — A smooth erect branching annual, with ovate-oblong toothed or lobed petioled leaves, and solitary axillary nodding purple flowers.

1. **N. physaloides,** Gært. — (Atropa physaloides, *L.*) — Waste and cultivated ground. Introduced. July – Sept. — Stem 1° – 3° high, with angled branches. Leaves 2′ – 5′ long, decurrent on the petiole. Corolla white in the throat. Fruiting calyx 5-angled, enclosing the globose berry.

5. LYCIUM, L.

Calyx 4 – 5-cleft. Corolla funnel-shaped, 5 – 10-cleft or toothed. Stamens 4 – 5: anthers opening lengthwise, separate. Stigma capitate. Berry not enclosed in the calyx. — Erect or twining often spiny shrubs, with entire alternate or clustered leaves, and axillary or terminal flowers.

1. **L. Carolinianum,** Michx. Stem erect, spiny, or unarmed, much branched; leaves small, clustered, club-shaped, fleshy; flowers solitary, axillary, purple; calyx and corolla 4-cleft; stamens 4, exserted. — Salt marshes. July – Sept. — Shrub 3° – 5° high. Leaves 1½′ long. Corolla small, hairy within. Berry red.

6. DATURA, L. JAMESTOWN WEED, THORN APPLE.

Calyx tubular, terete or angled, 5-cleft, separating near the base, the upper portion deciduous. Corolla funnel-shaped; the limb plaited, 5-lobed, convolute in the bud. Stamens 5: anthers opening lengthwise. Capsule spiny, imperfectly 4-celled, 4-valved, many-seeded. — Strong-scented poisonous herbs, with petioled oblong or ovate mostly toothed leaves, and large solitary flowers in the forks of the branches.

1. **D. Stramonium,** L. Smooth; stem stout, forking; leaves ovate or oblong-ovate, acute, sinuate-toothed; corolla sharply 5-toothed, white, twice as long as the 5-angled calyx; capsule erect. — Var. TATULA. Larger; leaves often cordate; stem and corolla purplish. — Waste ground, very common. June – Oct. — Stem 1° – 3° high. Leaves 4′ – 8′ long. Corolla 3′ – 4′ long.

2. **D. Metel,** L. Pubescent; stem stout, branching; leaves ovate, entire or slightly toothed; corolla white, 10-toothed; calyx loose, terete; capsule nodding. — Waste ground. Introduced. — Stems 3° – 4° high. Leaves 6′ – 8′ long. Corolla 6′ long.

7. PETUNIA, Juss.

Calyx 5-parted. Corolla funnel-shaped, plicate. Stamens 5, unequal; anther cells separate. Stigma capitate. Capsule 2-valved, many-seeded. — Clammy pubescent herbs.

1. **P. parviflora,** Juss. Annual, diffuse, leaves oblong-linear or spatulate; corolla small, pale bluish purple. — Florida, and westward. Introduced.

ORDER 92. CONVOLVULACEÆ. (CONVOLVULUS FAMILY.)

Chiefly twining or prostrate herbs, with alternate exstipulate leaves, and regular mostly showy and fugacious flowers. — Calyx 5-sepalous, imbricated. Corolla bell-shaped, funnel-shaped, or salver-form, 5-plaited or 5-lobed, convolute in the bud. Stamens 5, inserted on the tube of the corolla: anthers 2-celled, sagittate. Ovary free, single or double, 1–4-celled, with 1–2 erect anatropous ovules in each cell. Styles 1 or 2, entire or 2-cleft. Stigmas capitate, ovate, or acute. Capsule 2–6-seeded. Embryo large, coiled or curved in mucilaginous albumen.

Synopsis.

TRIBE I. **CONVOLVULEÆ.** Ovary single. Embryo with leafy cotyledons. Capsule opening by valves. — Flowers axillary, single or cymose.

* Style single. Stigmas globose.

1. IPOMŒA. Capsule 2-celled, the cells 2-seeded. Corolla bell- or funnel-shaped. Stamens mostly included.

* * Style single. Stigmas ovate or cylindrical.

2. JACQUEMONTIA. Capsule 2-celled, 4-seeded. Stigmas ovate, flattened.
3. CONVOLVULUS. Capsule imperfectly 2-celled, 4-seeded. Stigmas cylindrical.

* * * Styles 2, separate or partly united. Ovary 2-celled.

4. EVOLVULUS. Styles separate, 2-parted or 2-cleft.
5. BREWERIA. Styles separate or partly united, entire.

TRIBE II. **DICHONDREÆ.** Ovary double. Embryo with cotyledons. Capsule utricular, 1-seeded. — Stems creeping.

6. DICHONDRA. Corolla bell-shaped. Stigmas thick. Peduncle 1-flowered.

TRIBE III. **CUSCUTEÆ.** Ovary single. Embryo destitute of cotyledons. Capsule closed.

7. CUSCUTA. Twining parasites, with scale-like leaves. Styles 2.

1. IPOMŒA, L. MORNING GLORY.

Sepals 5. Corolla entire, or 5-angled, or 5-lobed. Stamens dilated at the base. Ovary 2-celled, rarely imperfectly 4-celled. Style simple: stigma capitate, 2-lobed. Capsule 2–4-celled, 2–4-valved, 4-seeded, or, by abortion, 1–3-seeded. Seeds smooth or hairy. — Twining or trailing rarely erect herbs, with cordate or sagittate entire or variously lobed leaves, and showy flowers on axillary peduncles.

* *Corolla salver-form: stamens exserted.*

1. **I. coccinea,** L. Leaves petioled, cordate, acuminate, angled at the base; peduncles as long as the petioles, 3 – 5-flowered; sepals awned; corolla slightly lobed, scarlet. — Cultivated ground. July – August. — Corolla 1′ long, sometimes yellowish.

2. **I. Quamoclit,** L. Leaves pinnatifid, with long and linear segments; peduncles 1 – 3-flowered, the pedicels much thickened upward; sepals ovate or oblong, awnless. — Spontaneous near gardens. July – Oct.

3. **I. Bona-Nox,** L. Smooth; leaves membranaceous, cordate, acuminate, entire, long-petioled; peduncles very stout, 5 – 7-flowered, longer than the leaves; sepals ovate, obtuse; the 2 outer ones appendaged; corolla white, almost salver-form; capsule ovate, pointed with the conical persistent base of the style. — South Florida. — Stem sometimes prickly. Leaves 2′ – 3′ long. Tube of the corolla 3′ – 4′ long.

* * *Corolla funnel- or bell-shaped: stamens included.*

+– *Capsule 3-celled.*

4. **I. purpurea,** Lam. Annual; stem glandular-roughened and hairy; leaves entire, round-cordate, acuminate; peduncles mostly longer than the leaves, 3 – 5-flowered; sepals ovate-lanceolate, acute, mostly hairy; corolla showy, blue, purple, or variegated. — Around dwellings. Introduced. June – Sept.

5. **I. hederacea,** Jacq. Annual, hairy; leaves membranaceous, broadly cordate, 3-lobed, the lobes acuminate; peduncles shorter than the leaves, 2 – 3-flowered; sepals densely hispid, ending in a long subulate point; bracts linear; corolla purple. — Cultivated ground. July – Sept. — Corolla 1½′ long.

6. **I. cathartica,** Poir. Smooth; leaves cordate, 3-lobed, with the lobes acuminate; peduncles about as long as the petioles, 3 – several-flowered, with leafy lanceolate bracts; sepals lanceolate, terminating in a long subulate point; pedicels shorter than the bracts; tube of the corolla greenish, the expanding acutely lobed border purple. — South Florida. — Leaves 1½′ – 2′ long. Corolla 3′ long.

+– +– *Capsule 2-celled, or imperfectly 4-celled.*

++ *Stem procumbent, rooting at the nodes: leaves succulent.*

7. **I. Pes-Capræ,** Sweet. Smooth and fleshy; leaves petioled, orbicular, or slightly notched at the apex, parallel-veined; peduncles 1 – 3-flowered, the ovate bracts minute; sepals oval or oblong, obtuse, mucronate; tube of the corolla very short. Sandy coast, Florida and Georgia. August – Oct. ♃ — Leaves 2′ long. Corolla 2′ long, purple.

8. **I. acetosæfolia,** R. & S. Smooth and fleshy; leaves oval or oblong, cordate, notched at the apex, entire or hastate-lobed, the lateral lobes entire or 2-cleft; peduncles as long as the petioles, 1-flowered; bracts subulate; sepals oblong, mucronate; corolla obscurely lobed, white, the tube yellowish. — Sandy coast, Florida to South Carolina. May – Sept. ♃ — Leaves 1′ – 2′ long. Corolla 2′ long.

I. BATATAS, Lam., includes the different kinds of the cultivated SWEET POTATO.

++ ++ *Stem twining: leaves mostly 3-lobed.*

= *Capsule hairy: seeds naked.*

9. **I. commutata,** R. & S. Annual; stem pubescent; leaves cordate, acuminate, entire, angled, or 3-lobed; peduncles about as long as the petioles, 1 - 5-flowered; corolla purple, 4 – 5 times as long as the ciliate sepals; capsule globose, 4-valved, shorter than the calyx. — Margins of swamps, and cultivated grounds. August – Oct. — Leaves 1′ – 1½′ long. Corolla 1½′ – 2′ long.

10. **I. trifida,** Don, var. **Torreyana,** Gray. Perennial, smoothish: peduncles longer than the 3-lobed leaves, 3 – 10-flowered; sepals glabrous capsules as long as the calyx; otherwise like the preceding. — Cultivated ground. Introduced.

11. **I. triloba,** L. Stem slender, hairy; leaves cordate, abruptly attenuated, but obtuse at the apex, entire or hastate-lobed, smooth below; peduncles 3-flowered, longer than the leaves; corolla small, purple, twice as long as the hairy sepals; capsule globose; seeds slightly pubescent on the angles. — South Florida. — Leaves 1′ – 1½′ long. Corolla ½′ long.

12. **I. lacunosa,** L. Stem and leaves smoothish; leaves cordate, obtuse or acuminate, entire or 3-lobed; peduncles 1 – 3-flowered, shorter than the leaves; corolla small, white, twice as long as the ciliate sepals; capsule globose, slightly hairy. — Low grounds. August – Oct.

= = *Capsule smooth: seeds woolly: flowers large.*

13. **I. pandurata,** Meyer. Stem twining, or prostrate, smoothish; leaves cordate, acuminate, entire or fiddle-shaped; peduncles commonly longer than the petioles, 1 – 6-flowered; bracts minute; sepals smooth, oblong-ovate, obtuse, mucronate, the two outer ones shorter; corolla white, with pointed lobes, the tube purple within. — River banks and margins of swamps, rarely in sandy pine barrens. August – Oct. ♃ — Root tuberous, very large. Corolla 3′ long. Capsule globose. Seeds woolly on the angles.

14. **I. Jalapa,** Pursh. Stem pubescent, stout; leaves membranaceous, deltoid, cordate, plaited by the strong impressed veins, hoary-pubescent beneath; peduncles 1 – 5-flowered; sepals oblong, tomentose; corolla white tinged with purple, notched at the angles, bright purple on the tube within; capsule ovate, pointed, 2-valved; seeds very silky. — Light sandy soil, Florida to South Carolina, along the coast. July – Sept. ♃ — Root very large. Leaves 3′ – 5′ long, occasionally 3-lobed. Corolla 3′ – 4′ long, opening at night. Ovary imperfectly 4-celled.

15. **I. sagittata,** Cav. Smooth and somewhat fleshy; stem slender; leaves sagittate, lanceolate or linear; the lateral lobes long, spreading, acute; peduncles 1 – 3-flowered, club-shaped, shorter than the leaves, minutely bracted; sepals oval, shorter than the ovate 4-valved pointed capsule; seeds silky on the angles; corolla bright purple. — Marshes along the coast. July – Sept. ♃ — Stem commonly 2° – 3° long. Corolla 3′ long.

++ ++ ++ *Stems twining: leaves pedately 7-parted.*

16. **I. sinuata,** Ort. Stem very long, woody at the base, the branches muricate, hairy; leaves smooth, with the divisions lanceolate, sinuate-toothed; peduncles shorter than the leaves, 1 – 2-flowered; pedicels flattened, dilated

upward, nodding; sepals ovate-lanceolate, acutish, smooth, half as long as the corolla, widely spreading in fruit; corolla white, purple in the throat; capsule globose; seeds smooth. — South Florida. July – Oct. ♃ — Leaves 4′–6′ wide. Corolla 1½′ long.

2. JACQUEMONTIA, Chois.

Sepals 5, unequal. Corolla bell-shaped, 5-plated. Style single: stigmas 2, ovate or oblong, flattened. Ovary 2-celled, 4-ovuled. Capsule 2-celled, 2–4-valved, 4-seeded. — Habit of Ipomœa.

1. **J. violacea,** Chois. Stem smoothish, twining; leaves petioled, oblong-ovate or ovate-lanceolate, acuminate, pubescent, the lower ones slightly cordate; peduncles longer than the leaves, cymosely many-flowered; sepals ovate, acuminate, the 2 outer ones larger; corolla small, purple; stigmas oblong, diverging; capsule smooth, 4-valved, shorter than the calyx. — South Florida. — Stem 1°–3° long. Leaves 1′–2′ long. Corolla ½′ long. Seeds roughish.

2. **J. tamnifolia,** Griseb. Hairy; stem erect or twining; leaves cordate-ovate, acuminate; peduncles longer than the petioles; flowers in a leafy-bracted head; sepals subulate, bristly, nearly as long as the blue corolla; stigmas distinct; capsule depressed. — Cultivated ground. July – Oct. ① — Stem 1°–4° long. Corolla ½′ long.

3. CONVOLVULUS, L.

Sepals, corolla, ovary, etc. of Ipomœa. Style single; stigmas 2, filiform or subulate, or broader and flat. Capsule 2–9-valved.

* *Calyx bractless: stigmas oblong or filiform.*

1. **C. Havanensis,** Jacq. Stems very long, woody, prostrate, canescent-tomentose; leaves small, oblong, obtuse, short-petioled; peduncles stout, single or by pairs, 1–3-flowered; outer sepals obovate, twice as long as the roundish inner ones; corolla white, sharply 5-lobed; valves of the capsule 6–9. — Sandy coast of South Florida (*Garber*). — Stem 15°–20° or more long. Leaves 6″–10″ long. Corolla 9″ long.

2. **C. nodiflorus,** Desr. Stem twining, woody, pubescent; leaves cordate-ovate, tomentose, short-petioled; peduncles as long as the petioles, mostly many-flowered; sepals ovate, obtuse, equal; corolla small; capsule 8-valved. — Bahia Honda Key, South Florida (*Curtiss*). — Stems climbing over low bushes. Leaves 1′ long. Corolla 5″ long.

3. **C. arvensis,** L. Stems prostrate or climbing, pubescent; leaves oblong-ovate, broadly sagittate; peduncles 1-flowered; corolla white; stigmas filiform. — Waste ground. Introduced.

* * *Calyx included in a pair of large bracts:*

4. **C. sepium,** L. Smooth; stem twining; leaves broadly sagittate, acute, the wide lateral lobes obliquely truncated and often toothed; peduncles as long as the petioles; bracts cordate-ovate or oblong; sepals acute; corolla white or rose-color. — Varies with the stem and shorter peduncles pubescent; leaves smaller and narrower. — Rich soil, Florida (the var.), and northward.

August–Sept. ♃ — Leaves 2′–4′ long. Corolla 1½′–2′ long. Stigmas oblong-ovate. Stamens dilated and flattened below.

5. **C. spithamæus,** L. Pubescent; stem erect, rarely twining at the summit; leaves ovate or oblong-ovate, cordate, the upper ones acute; peduncles longer than the leaves; bracts ovate-lanceolate; corolla white. — Dry soil, Florida, and northward. May–Sept. ♃ — Stem 1°–2° high. Leaves 1′–2′ long. Corolla 1½′–2′ long.

4. EVOLVULUS, L.

Sepals 5. Corolla bell-shaped or somewhat wheel-shaped, mostly hairy. Stamens included. Styles 2, distinct, 2-cleft or 2-parted: stigma obtuse. Capsule 2-celled, 4-seeded. — Small perennial herbs, with chiefly silky or hairy prostrate stems, entire leaves, and small flowers on axillary peduncles. Capsules nodding.

* *Common peduncle very short or none; the pedicels shorter than the leaves.*

1. **E. sericeus,** Swartz. Stem dividing at the base into numerous prostrate or ascending simple filiform branches; leaves sessile, linear to oblong, acute at each end; peduncle 1–3-flowered; sepals ovate-lanceolate, acuminate, half as long as the white wheel-shaped corolla. — Damp soil, Florida, Georgia, and westward. June–Oct. — Stems 6′–12′ long. Leaves 6″–9″ long. Corolla 4″–5″ in diameter.

2. **E. argenteus,** Pursh. Silky-villous throughout; stem rigid (6′ high), very leafy; leaves linear-lanceolate or spatulate; sepals lance-subulate; corolla blue or purple. — Pine Key, South Florida (*Blodgett,* ex *Gray*), Tennessee, and westward.

* * *Peduncles longer than the leaves.*

3. **E. mucronatus,** Swartz. Stem creeping, simple, sprinkled with appressed hairs; leaves rigid, elliptical-obovate, mucronate, nearly sessile, smooth above, pubescent on the veins beneath; peduncles bristle-like, rather longer than the leaves, 1–3-flowered; sepals ovate-lanceolate, acute, hairy, as long as the pedicel; corolla very small. — South Florida. — Stem 1° long. Leaves 4″–6″ long. Corolla 2″ wide.

4. **E. alsinoides,** L. Silky with long spreading hairs; stems very numerous, filiform, diffuse; leaves obovate or oblong, mucronate, short-petioled, peduncles bristle-like, often by pairs, 3–4 times as long as the leaves, 1–3-flowered; sepals ovate-lanceolate, acuminate, shorter than the pedicels; corolla wheel-shaped; styles parted nearly to the base. — South Florida. — Stems 1°–2° long. Leaves 4″–6″ long. Corolla 2″ wide.

5. BREWERIA, R. Br. (STYLISMA, 1st edit.)

Sepals 5. Corolla bell-shaped, hairy. Stamens included. Styles 2, distinct or united below, entire: stigmas peltate. Ovary 2-celled, 4-ovuled. Capsule 1–4-seeded. — Perennial prostrate pubescent herbs, with entire leaves, and mostly small flowers on axillary peduncles which are longer than the leaves.

1. **B. humistrata,** Gray. Hairy; leaves oblong, slightly cordate varying to narrow-linear; peduncles filiform, 1–7-flowered; sepals ovate, acute;

capsule smooth, nodding; bracts minute; corolla white; filaments hairy; styles united below. — Dry soil, Florida to South Carolina, and westward. July – Sept. — Stems 2° – 3° long. Leaves 1′ – 3′ long. Corolla 10″ long.

2. **B. aquatica,** Gray. Silky-pubescent and somewhat hoary; leaves linear-oblong, truncate or slightly cordate at the base, short-petioled; peduncles 1 – 7- (mostly 3-) flowered; sepals ovate-lanceolate, acuminate; capsule erect, pubescent; bracts subulate, as long as the pedicels; corolla purple; filaments smooth; styles distinct. — Margins of ponds in the lower districts. July – Sept. — Stems 2° – 3° long. Leaves ½′ – 1′ long. Corolla 5″ long.

3. **B. Pickeringii,** Gray. Soft-pubescent or villous; leaves linear; peduncles 1 – 3-flowered; bracts linear, as long as the flower; sepals ovate-lanceolate, very hairy, longer than the pedicel; corolla small, white; styles united nearly to the apex; stamens slightly exserted. — Sandy pine barrens, North Carolina, and northward. July – Sept. — Stems 2° – 3° long. Leaves 12″ – 15″ long. Corolla 5″ long.

4. **B. grandiflora,** Gray. Stem prostrate, tomentose (2° or more long); leaves oval, obtuse or emarginate, short-petioled (1½′ long); peduncle mostly shorter than the leaf, 1-flowered; calyx large, the sepals acute; corolla very large (2½′ – 3′ long), purple; capsule 4-seeded. — Sandy coast at Sarasota Bay, South Florida (*Garber*).

6. DICHONDRA, Forst.

Calyx 5-parted, with the lobes obovate. Corolla somewhat wheel-shaped, 5-parted, shorter than the calyx. Stamens included. Ovaries 2, distinct, 2-ovuled. Styles 2: stigmas capitate. Utricles 2, one-seeded. — Low pubescent creeping herbs, with broadly cordate petioled leaves, and solitary bractless flowers on axillary peduncles.

1. **D. repens,** Forst. — Low grounds. March – Oct. ♃ — Stems filiform, 6′ – 12′ long. Leaves ⅓′ – 1½′ in diameter, on petioles 1′ – 4′ long. Peduncles shorter than the petioles. Calyx silky. Corolla minute, greenish white.

7. CUSCUTA, Tourn. Dodder.

Calyx 4 – 5-cleft, or 4 – 5-sepalous. Corolla globular-urn-shaped, bell-shaped, or somewhat tubular, 4 – 5-cleft. Stamens 4 – 5, with fimbriate mostly confluent scales at the base. Ovary 2-celled, 4-ovuled. Styles 2: stigmas capitate (in our species). Capsule 4-seeded. Embryo filiform, coiled around fleshy albumen. Cotyledons none. — Twining parasites, germinating in the ground, but early decaying at the root. Stems filiform, yellow or reddish, without leaves, or with minute scales in their place. Flowers white, small, variously clustered.

* *Calyx* 4 – 5-*cleft: flowers pedicellate.*

+ *Lobes of the corolla acute.*

1. **C. arvensis,** Beyrich. Low; flowers small, 5-parted, in cluster-like cymes; lobes of the calyx broad and obtuse, of the corolla lanceolate, acuminate, spreading, inflexed at the point, longer than the tube; scales ovate, often

partly exserted; capsule globose, thin, yellowish, indehiscent. — Fields and sterile soil, on small herbs. June – July.

2. **C. umbellata,** HBK. Stems low, capillary, spreading; cymes loosely umbellate, few-flowered; flowers small; lobes of the calyx acute, of the corolla narrowly lanceolate, longer than the tube, spreading; scales oval, incurved; capsule depressed, circumscissile, covered by the corolla. — South Florida (*Garber*), on low herbs.

3. **C. decora,** Choisy, var. **pulcherrima,** Engelm. Stem branching; flowers rather large, 5-parted, in smooth umbel-like cymes; lobes of the calyx ovate-lanceolate, acute; lobes of the corolla ovate, acuminate, crenulate, 1-nerved, spreading, as long as the tube; scales ovate, incurved, as long as the tube. — Damp soil, Florida, and westward. May.

4. **C. inflexa,** Engelm. Flowers in umbellate cymes; sepals acute, keeled; corolla fleshy, cylindrical, mostly 4-cleft, the ovate acute lobes as long as the tube; scales minute, slightly toothed; capsule depressed, enclosed or crowned with the withered corolla. — Georgia, and northward, mostly on shrubs.

+ + *Lobes of the corolla obtuse.*

5. **C. obtusiflora,** HBK., var. **glandulosa,** Engelm. Stems widely spreading, bright orange; flowers short-pedicelled, glandular; lobes of the calyx and corolla obtuse; scales incurved, deeply fringed; capsule large, depressed; styles short and thick. — Georgia, Florida, and westward, on Polygonum.

6. **C. Gronovii,** Willd. Stem climbing high; flowers mostly 5-cleft, in loose paniculate cymes; lobes of the corolla ovate, obtuse, spreading, mostly shorter than the tube; scales large, confluent at the base; capsule globose, brown. — Low shady places, on coarse herbs, Florida, and northward. August – Oct.

7. **C. rostrata,** Shuttl. Stem twining high; flowers large, 5-parted, in umbel-like cymes; lobes of the calyx ovate, obtuse; lobes of the corolla ovate, obtuse, spreading and at length reflexed, half as long as the tube; scales connate at the base; capsule large, acute. — Shaded moist places on tall herbs, on the mountains of North Carolina, and northward.

* * *Flowers sessile, in compact clusters: calyx of 5 separate sepals, surrounded by several similar bracts: corolla persistent at the apex of the capsule.*

8. **C. compacta,** Juss. Stems climbing high; bracts and sepals orbicular, concave, denticulate, imbricated; tube of the corolla equalling or longer than the calyx, the oblong obtuse lobes spreading; scales confluent at the base; capsule globose-ovate. — Damp shady places, Florida, and northward. July – Oct. — Clusters often continuous, and spirally coiled around herbs and shrubs.

9. **C. glomerata,** Choisy. Stems coarse, the dense clusters of flowers forming rope-like masses; bracts and sepals recurved-spreading; lobes of the corolla oblong, obtuse, much shorter than the tube; styles longer than the ovary. — Tennessee, and westward, mostly on tall Compositæ.

ORDER 93. POLEMONIACEÆ. (POLEMONIUM FAMILY).

Chiefly herbs, with opposite or alternate leaves, and regular solitary or cymose flowers. — Calyx 5-cleft or 5-parted, with membranaceous-margined lobes, imbricated in the bud. Corolla 5-lobed, convolute in the bud. Stamens 5, inserted on the tube of the corolla. Ovary 3-celled, with 3 to many amphitropous ovules attached to the central placenta. Style 3-cleft. Capsule 3-celled, loculicidally 3-valved. Seeds angular. Embryo straight in the axis of copious albumen. Cotyledons leafy. Radicle inferior.

Synopsis.

1. **PHLOX.** Corolla salver-form. Filaments unequally inserted on the tube. Leaves entire.
2. **GILIA.** Corolla tubular-funnel-shaped. Filaments equally inserted near the throat of the corolla. Leaves pinnately divided.
3. **POLEMONIUM.** Corolla short-bell-shaped. Filaments inserted on the throat of the corolla. Leaves pinnate.

1. PHLOX, L.

Calyx cylindrical or bell-shaped, 5-cleft. Corolla salver-form, with a long and slender tube, and obovate or roundish lobes. Stamens 5, included, unequally inserted on the tube. Style filiform. Ovules solitary in the cells. Capsule ovoid, 1 – 3-seeded; the valves at length separating from the central placenta. Seeds erect. — Mostly perennial herbs, with opposite or (the upper) alternate entire leaves, and showy purple or white flowers in terminal panicled cymes.

§ 1. *Stems herbaceous, erect or ascending.*

* *Style long, filiform: calyx teeth lanceolate-subulate, not awn-pointed (except in No. 1): lobes of the corolla entire.*

1. **P. paniculata,** L. Smooth; stem tall, branched above; leaves ovate-lanceolate, acute or acuminate, the upper often cordate; cymes numerous, close-flowered, forming a corymbose or pyramidal panicle; calyx teeth long, bristle-pointed; lobes of the corolla round-obovate. —Var. ACUMINATA. Leaves acuminate at each end, the lower surface, like the stem, pubescent; calyx lobes shorter. — Rich woods in the upper districts. June – July. — Stem 2° – 4° high. Leaves 2′ – 4′ long. Corolla purple or white.

2. **P. maculata,** L. Stem erect, pubescent and roughish, especially above, rarely branched, often spotted with purple; leaves rather rigid, lanceolate, acute; the lowest often linear and elongated, the upper broader and rounded at the base; cymes closely many-flowered, lateral and terminal, forming an oblong or pyramidal panicle; calyx lobes straight, acute; tube of the corolla slender, curved; the lobes obovate. — Low woods. June – July. — Stem 2° – 3° high. Leaves 2′ – 4′ long. Corolla purple or occasionally white.

3. **P. ovata,** L. Smooth; stem (1° high) erect or ascending, sparingly branched; leaves varying from ovate to lanceolate, acute or acuminate, the upper often rounded or slightly cordate at the base; panicle corymbose, few-flowered; calyx lobes lanceolate, short-acuminate. — Open woods in the upper districts.

4. **P. glaberrima,** L. Smooth or nearly so throughout; stem erect, mostly simple; leaves thin, the lowest mostly linear, the uppermost ovate-lanceolate; calyx lobes lanceolate-subulate, very acute; corolla pale purple. — Dry open woods, chiefly in the upper districts. July. — Stem 2° – 4° high. Leaves 2′ – 4′ long. Corolla 1′ long.

Var. **suffruticosa,** Gray. Stem scabrous, especially above, with short rigid hairs; leaves narrower and more rigid; corolla lobes round-obovate. — With the type.

5. **P. reptans,** Michx. Pubescent or smoothish; stem low, simple, stoloniferous; leaves few, distant, lanceolate; the radicle and those on the stolons larger, spatulate or obovate; cyme terminal, few-flowered; calyx lobes linear-subulate, much shorter than the spreading or recurved pedicels; corolla lobes obovate, shorter than the slender straight tube; anthers slightly exserted. — Damp shady woods in the upper districts. May – June. — Stem 6′ – 10′ high. Leaves 6″ – 8″ long, the radical ones 1′ – 3′ long. Corolla 1′ long, purple.

6. **P. Stellaria,** Gray. Minutely pubescent; stem slender, branching; leaves linear, spreading or recurved, cymes mostly 3-flowered, the pedicels erect; flowers small; calyx lobes subulate; lobes of the corolla wedge-shaped, cleft to the middle, nearly equalling the tube. — Cedar glades, Tennessee (*Gattinger*). May. — Stem 6′ – 8′ high. Leaves 1′ – 1½′ long.

* * *Style short, scarcely longer than the ovary: calyx teeth linear-subulate, tapering into an awn-like point: lobes of the corolla often notched: stems pubescent.*

7. **P. divaricata,** L. Softly pubescent and more or less glandular; stems ascending, simple; leaves distant, lanceolate or ovate-lanceolate; cymes corymbose, loosely-flowered; lobes of the corolla obovate, notched or entire, as long as the tube, and twice as long as the calyx. — Woods and banks. April – May. — Stem 1° high. Leaves 1′ – 1½′ long. Corolla 6″ – 9″ long, pale bluish purple.

8. **P. amœna,** Sims. Softly pubescent or villous; stem low, ascending, simple; leaves linear-lanceolate, sessile; the lower ones approximate, the upper distant and often alternate; cymes terminal, compact, leafy-bracted; corolla tube longer than the obovate lobes, and twice as long as the straight barely awned ciliate calyx teeth. — Dry gravelly hills and pine barrens. April – May. — Stem 6′ – 12′ high. Leaves 1′ long. Corolla bright purple, sometimes white, the tube 6″ – 8″ long.

9. **P. pilosa,** L. Pubescent or nearly glabrous; stem erect, mostly branching; leaves linear, or linear-lanceolate, distant, acute; cymes corymbose; calyx teeth prolonged into a long and spreading bristle-like point, hairy. — Dry woods. April – May. — Stem rather slender, 1° – 1½° high. Leaves 2′ – 4′ long. Corolla ½′ long, purple.

10. **P. Floridana,** Benth. Stem erect, simple, closely pubescent; leaves uniform, linear-lanceolate, acute, spreading or recurved; cymes crowded or corymbose; calyx teeth spreading, somewhat bristle-pointed, glandular-pubescent, a third to half as long as the tube of the large corolla. — Dry open woods, Middle Florida. May. — Stem 1½° – 2° high. Leaves 2′ – 3′ long. Corolla 1′ broad, pale purple, the lobes round-obovate and entire.

§ 2. *Stems shrubby, tufted, creeping: leaves subulate, rigid, leafy in the axils: style short.*

11. **P. subulata,** L. Pubescent; flowering stems erect; leaves very numerous, the upper ones linear and mostly alternate; calyx teeth subulate, erect, spine-pointed; lobes of the corolla notched or entire. (P. setacea, *L.*?) — Sandy pine barrens. April – May. — Stems 4′ – 12′ long. Leaves 4″ – 6″ long. Corolla ½′ – 1′ broad, purple or white.

P. Drummondii, *Hook.*, is an annual species, common in gardens.

2. GILIA, Ruiz & Pavon.

Calyx tubular or bell-shaped, 5-cleft. Corolla funnel-shaped, 5-lobed. Stamens inserted equally near the mouth of the corolla. Ovules commonly numerous in the cells. Capsule oblong or obovoid. Seeds angled or compressed. — Herbs, with finely divided leaves and showy flowers.

1. **G. coronopifolia,** Pers. Stem tall, simple, pubescent; leaves pinnately divided into many filiform segments; flowers scarlet, racemose or panicled; corolla tubular-funnel-shaped; stamens exserted. — Dry sandy soil, South Carolina, and westward. July. ② — Stem 2° – 4° high. Corolla 1′ long, yellow and spotted with red within.

3. POLEMONIUM, L.

Calyx bell-shaped, 5-cleft. Corolla short-bell-shaped, 5-lobed. Stamens 5, declined, inserted equally on the throat of the corolla, with a hairy appendage at the base of the filaments. Ovules numerous in the cells. Capsule ovoid. Seeds angled. — Herbs, with alternate pinnately divided leaves, and blue or white flowers in a nearly bractless corymb.

1. **P. reptans,** L. Smooth; stem weak, diffusely branched; leaves petioled, pinnate, with 5 – 13 lanceolate or elliptical entire leaflets; corymbs peduncled, few-flowered; flowers nodding; calyx lobes ovate, acute; corolla blue; anthers white. — Shady woods in the upper districts. April – May. ♃ — Stem ½° – 1° high. Leaflets ½′ – 1½′ long. Calyx enlarged in fruit.

Order 94. GENTIANACEÆ. (Gentian Family.)

Chiefly smooth and bitter herbs, with colorless juice, opposite entire partly sheathing exstipulate leaves, and regular often showy flowers. — Calyx 4 – 12-parted, or 4 – 12-cleft. Corolla 4 – 12-lobed, convolute, rarely valvate or imbricated in the bud, hypogynous. Stamens alternate with the lobes of the corolla, and inserted on its tube: anthers 2-celled. Ovary single, with numerous anatropous ovules. Stigmas 1 – 2. Capsule 1-celled, or imperfectly 2 – 4-celled by the introversion of the margins of the valves, septicidally 2-valved. Placentæ parietal. Seeds numerous. Embryo minute, in the axis of fleshy albumen.

Synopsis.

* Corolla convolute, or (in Obolaria) imbricated in the bud. Testa membranaceous. — Leaves sessile.

1. SABBATIA. Style conspicuous, deciduous. Stigmas linear, twisted. Corolla wheel-shaped, 5 - 12-parted.
2. EUSTOMA. Style conspicuous, persistent. Stigmas roundish, flat. Corolla tubular, 4 - 5-parted.
3. GENTIANA. Stigmas sessile, flat, persistent. Corolla bell-shaped or funnel-form, 4 - 5-lobed, mostly with plaited appendages between the lobes.
4. BARTONIA. Calyx and corolla 4-lobed. Stigmas sessile. Leaves scale-like.
5. VOYRIA. Stigma capitate. Corolla salver-shaped. Stem white, scaly.
6. OBOLARIA. Calyx 2-leaved. Corolla 4-lobed, imbricated in the bud.
7. FRASERA. Corolla wheel-shaped, 4-parted, the lobes with a large depressed gland in the middle.

* * Corolla folded in the bud. Testa woody. Petioles elongated.

8. LIMNANTHEMUM. Leaves floating, cordate. Flowers clustered on the petiole.

1. SABBATIA, Adans. AMERICAN CENTAURY.

Calyx 5 - 12-parted. Corolla wheel-shaped, 5 - 12-parted, withering-persistent. Stamens 5 - 12, inserted on the throat of the corolla: anthers sagittate, mostly recurved. Style conspicuous: stigmas linear or oblong, twisted. Capsule globose, 1-celled, 2-valved, many-seeded. — Annual or biennial branching herbs, with cymose or panicled white or purple showy flowers.

* *Calyx and corolla mostly 5-parted.*

+ *Flowers in corymbose cymes, white, turning yellowish: branches opposite.*

1. **S. lanceolata,** Torr. & Gray. Stem tall, terete below, 4-angled and corymbosely branched above; leaves ovate or roundish, 3 - 5-nerved, clasping, the upper lanceolate; cymes many-flowered; lobes of the corolla (often 6) obovate-oblong, twice as long as the filiform calyx lobes. (S. corymbosa, *Baldw.*) — Wet pine barrens, Florida to North Carolina. July. — Stem 2° - 3° high. Leaves 1′ - 1½′ long; the lowest small. Corolla 10″ wide.

2. **S. paniculata,** Pursh. Stem virgate, wing-angled throughout, commonly much branched from the base; leaves clasping, lanceolate, 3-nerved, the upper and floral ones linear, the lowest tufted, oblong-obovate; cymes densely few-flowered, leafy; lobes of the corolla obovate, one third longer than the linear calyx lobes. — Low grassy meadows, Florida to North Carolina. August. — Stem 9′ - 18′ high. Leaves ½′ - 1′ long. Corolla ½′ wide.

3. **S. macrophylla,** Hook. Glaucous; stem terete, corymbosely branched above; leaves thick, erect, ovate-lanceolate, acute, clasping, 3 - 5-nerved; cymes large, flat-topped; corolla small, the lobes thrice as long as the very short bristle-like calyx lobes. — Wet pine barrens, Florida, and westward. July - August. — Stem rigid, hollow, 2° - 2½° high. Leaves 1½′ - 3′ long. Corolla 5″ - 6″ wide.

++ *Flowers in panicled cymes, purple: branches opposite.*

4. **S. angularis,** Pursh. Stem square, wing-angled, erect, paniculately much branched; leaves numerous, ovate, clasping, 3 - 5-nerved, often as long as the joints, the upper acute; lobes of the corolla oblong, about twice as long

as the linear calyx lobes. — Low rich grounds. August. — Stem 1° – 2° high. Leaves 1′ – 1½′ long. Corolla 1′ wide.

5. **S. brachiata,** Ell. Stem erect, terete, paniculately branched near the summit; leaves sessile, lanceolate, the upper linear, acute, the lowest clustered; flowers in small loose peduncled cymes, terminating the branches, and forming an oblong or pyramidal panicle; lobes of the corolla narrowly oblong, twice as long as the linear calyx lobes. — Low grounds in the middle and upper districts. July – August. — Stem 2° high. Leaves 1′ long. Corolla 1′ wide.

+ + + *Flowers scattered, on long peduncles, white or purple: branches alternate.*

6. **S. Elliottii,** Steud. Stem low, terete, paniculately much branched from near the base, the branches diffuse; leaves small, sessile; the lowest obovate, the upper linear; lobes of the corolla 3 – 4 times as long as the short filiform calyx lobes. (S. paniculata, *Ell.*) — Low pine barrens, Florida to South Carolina. August – Sept. — Stems ½° – 1½° high. Leaves 3″ – 6″ long. Corolla 8″ – 10″ wide, white.

7. **S. gracilis,** Pursh. Stem slightly 4-angled, erect or reclining, diffuse, the branches 1 – 3-flowered; leaves linear or oblong-linear, the uppermost almost filiform; flowers terminating the short branchlets; lobes of the corolla obovate-oblong, rather longer than the filiform calyx lobes. — Low grassy pine barrens and meadows. July – August. — Stem slender, 1° – 1½° long. Leaves 1′ – 1½′ long. Corolla 12″ – 15″ wide, purple.

8. **S. stellaris,** Pursh. Stem obscurely 4-angled, slender, paniculately long-branched; leaves somewhat fleshy, the lowest lanceolate or oblong, obtuse, the upper linear, acute; flowers on very long peduncles; lobes of the corolla oblong, longer than the filiform calyx lobes. — Salt marshes. August – Sept. — Stem 1° – 3° high. Leaves 1′ – 2′ long. Peduncles 1′ – 4′ long. Corolla 1½′ wide, purple.

9. **S. calycosa,** Pursh. Stem low, terete; leaves thin, lanceolate or oblong, obtuse, narrowed at the base, the lowest petioled; flowers few; corolla white, 5 – 7-lobed, shorter than the lanceolate leafy calyx lobes. — River swamps. July – August. — Stem 6′ – 12′ high, rigid. Leaves 1′ – 1½′ long. Corolla 8″ – 10″ wide.

* * *Calyx and corolla 7 – 12-parted: flowers purple.*

10. **S. chloroides,** Pursh. Stem erect, terete, simple, or 1 – 2-forking, 1 – 5-flowered; leaves lanceolate, sessile, uniform, or the lowest spatulate-oblong and the upper linear, acute; corolla large, 8 – 12- (mostly 10-) parted, commonly more than twice as long as the linear or subulate calyx lobes. — Margins of pine barren ponds and swamps. July – August. — Stem 1° – 2° high. Leaves 1′ long. Corolla 1½′ – 3′ wide.

11. **S. Boykinii,** Gray. Stem mostly simple, somewhat angled; leaves lanceolate-oblong, or the lowest elliptical; flowers single or 3 – 7 in a terminal capitate cluster, sessile and 2-bracted; corolla 8 – 9-parted, much longer than the oblong-lanceolate calyx lobes. — Middle Georgia (*Dr. Boykin*). — Stem 1° high. Leaves 1′ – 2′ long. Corolla 1½′ wide.

12. **S. gentianoides,** Ell. Stem erect, simple, slender; lowest leaves lanceolate or oblong, narrowed at the base; the others long, linear, sessile; flowers large, in axillary and terminal clusters, or terminal and solitary; corolla 8-10-parted, 2-3 times as long as the subulate calyx lobes; anthers straight. — Low pine barrens, Georgia, Florida, and westward. July-August. — Stem 1°-2° high. Leaves 1½′-3′ long. Corolla 2′ wide.

2. EUSTOMA, Don.

Calyx bell-shaped, 4-5-parted, sharply 4-5-angled; the lobes subulate, keeled. Corolla tubular, 4-5-lobed, the lobes erect, acute. Stamens 4-5: anthers sagittate. Style conspicuous, erect, persistent: stigmas round-ovate. Capsule oblong, obtuse. Placentæ spongy, sutural. Seeds minute, globose, sessile. — Herbs, with oblong glaucous clasping leaves, and panicled showy purple or blue flowers.

1. **E. exaltatum,** Griseb. Stem (2°-3° high) terete, glaucous, paniculately forking above; leaves mucronate, decurrent, the upper lanceolate; flowers long-peduncled, terminal, blue; calyx lobes as long as the tube of the corolla, dilated and membranaceous at the base. — South Florida. ① — Corolla 12″-15″ long.

3. GENTIANA, Tourn. Gentian.

Calyx 4-5-parted. Corolla bell-shaped or funnel-shaped, 4-5-lobed, mostly with plaited toothed appendages between the lobes. Stamens 4-5. Stigmas 2, sessile, compressed, persistent. Capsule 1-celled, 2-valved, many-seeded; the seeds sutural, or covering the inner face of the valves. — Flowers showy, solitary or clustered, axillary and terminal.

* *Annual: corolla funnel-shaped, destitute of appendages: anthers versatile: capsule sessile: seeds wingless.*

1. **G. quinqueflora,** Lam. Stem 4-angled, slender, branching; leaves ovate or ovate-lanceolate, slightly clasping at the base, 3-5-nerved; flowers 3-5, terminating the short branches; corolla blue, rather slender, with ovate bristle-pointed entire lobes, much longer than the subulate calyx lobes. — Dry soil along the mountains. August-Sept. — Stem 1°-2° high. Leaves 1′ long. Corolla 1′ long.

2. **G. crinita,** Frœl. Stem terete below, the upper portion and branches 4-angled; leaves lanceolate, acute, closely sessile, the lowest narrowed into a petiole; flowers terminal, on long angular peduncles; calyx lobes 4, ovate-lanceolate, acute, as long as the tube of the corolla; lobes of the corolla 4, fimbriate, nearly as long as the tube. — Damp soil along the mountains. Oct-Nov. — Stem 1°-2° high, often much branched. Leaves 1′-2′ long. Corolla blue, 1½′-2′ long.

* * *Perennial: corolla bell-shaped, with plaited toothed appendages between the lobes: anthers erect, mostly connivent: capsule stipitate: seeds commonly winged.*

3. **G. ochroleuca,** Frœl. Stem low, smoothish; leaves oblong or obovate-oblong, the upper narrower and acute; flowers single or clustered;

corolla open, yellowish white, a third to half longer than the erect linear lanceolate calyx lobes; appendages nearly entire; seeds wingless. — Open woods. Sept.–Oct. — Stem 6′–12′ high. Corolla 1½′ long, striped within with green and purple veins. Anthers separate.

4. **G. Elliottii,** Chapm. Stem rough and slightly pubescent; leaves lanceolate or linear-lanceolate; flowers single or clustered; calyx lobes linear-lanceolate, twice as long as the tube; corolla large, open, blue, striped within with yellow and deeper blue; appendages 2-cleft; seeds lanceolate, narrowly winged, covering the entire inner face of the valves. (G. Catesbæi, *Ell.*) — Banks of streams and ditches in the lower and middle districts. Oct. — Stem 1°–1½° high. Corolla 1½′ long.

Var. **parvifolia,** Chapm. Stem tall (2° high), slender; leaves short (½′–1′ long, sessile, ovate or oblong-ovate, rounded or cordate at the base, rigid; calyx lobes erect, lanceolate; appendages of the corolla broad, unequally 2-cleft, fimbriate. — Swamps, near the coast, Georgia and Florida. — Corolla 2′ long.

Var. ? **latifolia,** Chapm. Stem low (6′–12′ high), rigid; leaves (2′–3′ long) membranaceous, oblong or ovate-oblong, acute at each end; calyx lobes linear, shorter than the tube, spreading; appendages of the corolla equally divided into two slender bristle-pointed nearly entire lobes. — River banks, Middle Florida. — Corolla 1′–1½′ long.

5. **G. Saponaria,** L. Stem smooth; leaves lanceolate, narrowed at the base; calyx lobes linear or spatulate, about as long as the tube; corolla light blue; the lobes short and broad, obtuse, erect, or converging, barely longer than the 2-cleft minutely-toothed appendages; seeds acute, narrowly winged, covering the valves. (G. Catesbæi, *Walt.*) — Moist woods in the upper districts. Sept.–Oct. — Flowers clustered.

6. **G. Andrewsii,** Griseb. Stem smooth (1°–2° high); leaves ovate-lanceolate, acute, narrowed at the base; flowers clustered, axillary and terminal; calyx lobes ovate, spreading, shorter than the tube; corolla (1′ long) club-shaped, inflated, closed; the broad rounded lobes shorter than the slightly toothed appendages; capsule at length partly exserted; seeds broadly winged. — Mountains of North Carolina. Sept.–Oct.

7. **G. angustifolia,** Michx. Stem low, smooth, 1-flowered; leaves linear, fleshy; calyx lobes linear, erect, half as long as the corolla; corolla large, bright blue, the lobes ovate, twice as long as the broad toothed appendages. — Varies with the corolla green without and white within. — Low pine barrens, Florida to North Carolina. Nov.–Dec. — Stem 4′–10′ high. Corolla 2′ long. Capsule long-exserted.

4. BARTONIA, Muhl.

Calyx 4-parted. Corolla 4-parted. Stamens 4: anthers small. Stigmas sessile. Capsule 1-celled, 2-valved, septicidal. Seeds covering the inner surface of the valves. — Small annual herbs, with erect filiform stems, scale-like subulate leaves, and white flowers.

1. **B. verna,** Muhl. Stem (2′–6′ high) simple or sparingly branched, succulent, few-flowered; calyx lobes lanceolate-subulate, one third as long as

the oblong or obovate obtuse spreading white lobes of the corolla; anthers oblong; capsule roundish. — Damp pine barrens near the coast. Feb – April.

2. **B. tenella,** Muhl. Stem (6′ – 12′ high) branched; the branches, like the leaves, opposite or alternate, many-flowered; calyx lobes subulate, as long as the tube of the greenish white corolla; lobes of the corolla erect, acute; anthers globose; capsule oblong-lanceolate. — Swamps. Sept. – Oct. — Flowers much smaller than in No. 1.

5. VOYRIA, Aubl.

Calyx 5-cleft. Corolla salver-form. Stamens included: anthers erect. Style persistent: stigma capitate. Capsule 2-celled. Seeds on the margin of the introflexed valves, usually tailed at each end. — Colorless herbs, growing on rotten wood. Leaves scale-like. Flowers terminal.

1. **V. Mexicana,** Griseb. Stem simple; scales opposite; cymes few-flowered; calyx lobes lanceolate, acute; corolla small, the lobes shorter than the tube; seeds tailed. — Keys of South Florida (*Curtiss*). — Stem 4′ – 6′ high. Corolla 3″ – 4″ long.

6. OBOLARIA, L.

Calyx of 2 spatulate bract-like sepals. Corolla bell-shaped, 4-cleft, imbricated in the bud. Stamens 4: anthers round-cordate. Style short: stigma 2-lipped. Capsule ovoid, 1-celled. Seeds numerous, covering the valves. — A low sparingly branched perennial herb, with opposite wedge-obovate leaves, and single or clustered axillary and terminal purplish flowers.

1. **O. Virginica,** L. — Rich shady woods in the upper districts. March – April. — Plant smooth, purplish, 3′ – 8′ high. Branches generally 3-flowered.

7. FRASERA, Walt. AMERICAN COLUMBO.

Calyx 4-parted. Corolla wheel-shaped, 4-parted, the lobes each with a depressed fringed gland on the upper face. Stamens 4: anthers nodding. Style persistent: stigmas spreading. Capsule compressed. Seeds few, large, winged, borne on the margins of the valves. — Tall smooth perennial herbs, with whorled or opposite sessile leaves and branches, and cymes of greenish yellow flowers, disposed in a large terminal panicle.

1. **F. Carolinensis,** Walt. Stem (3° – 8° high) erect; leaves and branches mostly four in a whorl, lance-oblong, the lowest spatulate; panicle pyramidal; corolla lobes oblong, mucronate, dotted with purple. — Rich soil in the upper districts. July. — Lowest leaves 1° long. Corolla 1′ wide. Root large.

8. LIMNANTHEMUM, Gmel.

Calyx 5-parted. Corolla wheel-shaped, 5-parted, the lobes infolded in the bud, ciliate, and glandular-crested at the base. Stamens 5. Style short or none: stigma 2-lobed, persistent. Capsule 1-celled, opening irregularly. Seeds few or many. Testa woody. — Perennial aquatic herbs, with floating circular or cordate spongy leaves, and white peduncled flowers clustered near the summit of the long petiole.

1. **L. lacunosum,** Griseb. Leaves (1′–2′ wide) cordate, entire, smooth; petioles (6′–12′ long) filiform; seeds smooth. — Shallow ponds, Florida, and northward. June–July.

2. **L. trachyspermum,** Gray. Leaves (3′–5′ wide) circular, crenate, rough and pitted beneath; petioles stout, dotted, elongated; seeds glandular-roughened. — Ponds in deep water. April–June.

ORDER 95. APOCYNACEÆ. (DOGBANE FAMILY.)

Herbs or shrubs, with acrid milky juice, mostly opposite entire exstipulate leaves, and regular cymose or panicled flowers. — Calyx free, 5-parted, imbricated in the bud, persistent. Corolla bell-shaped, funnel-shaped, or salver-form, 5-lobed, convolute in the bud. Stamens 5, distinct, inserted on the tube of the corolla: anthers mostly sagittate, erect, introrse. Pollen granular. Ovaries 2, distinct, their styles united. Fruit few–many-seeded. Seeds anatropous or amphitropous, naked, or bearing a tuft of down at the apex (*comose*). Embryo straight in scarce albumen.

Synopsis.

* Fruit a many-seeded follicle.

+ Seeds comose. Leaves opposite.

1. **APOCYNUM.** Corolla bell-shaped, with scale-like appendages at the base of the lobes. Herbs.
2. **ECHITES.** Corolla funnel- or salver-shaped. Stamens inserted above the base of the corolla.

+ + Seeds naked. Leaves opposite or alternate.

3. **AMSONIA.** Corolla funnel-shaped. Flowers panicled. Leaves alternate.
4. **VINCA.** Corolla salver-shaped. Flowers axillary. Leaves opposite.

* * Fruit a few-seeded drupe.

5. **VALLESIA.** Corolla salver-shaped. Leaves alternate. Flowers in cymes.

1. APOCYNUM, Tourn. INDIAN HEMP.

Calyx 5-parted. Corolla bell-shaped, 5-lobed, with scale-like appendages at the base of the lobes. Stamens inserted on the base of the corolla: anthers sagittate. Stigma sessile, 2-lobed. Follicles long and slender. Seeds numerous, obovoid, comose. — Perennial erect branching herbs, with opposite oval or oblong mucronate petioled leaves, and small white flowers in lateral and terminal cymes.

1. **A. cannabinum,** L. Stem smooth, with erect branches; leaves oval or oblong, mucronate, pubescent beneath; cymes terminal, close-flowered, shorter than the leaves; calyx lobes lanceolate; lobes of the greenish white corolla erect. — Var. GLABERRIMUM. Smooth throughout; leaves narrower, often acute at each end. — Dry or damp soil. July–August. — Stem 2°–3° high. Leaves 2′–3′ long. Corolla 2″ long.

2. **A. androsæmifolium,** L. Stem smooth, with spreading branches; leaves oval or ovate, smooth, or pubescent beneath; cymes axillary and termi-

nal, long-peduncled, commonly exceeding the leaves, loose-flowered; calyx lobes ovate; lobes of the white or pale rose-colored corolla spreading or revolute. — Rich soil, North Carolina, and northward. June – July. — Stem 2° – 3° high. Corolla twice as large as in No. 1.

2. ECHITES, P. Browne.

Calyx 5-parted, with 3 – 5 glands at the base within. Corolla salver- or funnel-shaped, 5-lobed; the tube dilated above the insertion of the stamens. Filaments very short: anthers sagittate, bearing the pollen, and adhering to the stigma in the middle. Nectary of 5 distinct or partly united glands. Style simple: stigma thick, with a spreading membranous appendage at the base. Follicles long and slender. Seeds linear-oblong, comose or plumose. — Mostly woody vines, with opposite leaves, and cymose axillary and terminal flowers.

1. **E. umbellata,** Jacq. Smooth; stem twining; leaves distant, oval, mucronate, slightly cordate; peduncles 3 – 7-flowered; calyx lobes ovate, acuminate; corolla cylindrical, pubescent within; anthers awnless; stamens inserted near the middle of the tube; follicles divaricate. — South Florida. — Leaves 1½′ – 2′ long, recurved and folded. Flowers white, 2′ long.

2. **E. Andrewsii,** Chapm. Smooth; stem low, erect or twining; leaves approximate, oval or oblong, the margins revolute; peduncles 3 – 5-flowered; calyx lobes lanceolate-subulate; corolla bell-shaped; anthers awned; glands of the nectary 5, rounded, as long as the ovaries; follicles incurved. (E. suberecta, *Andr.*) — Sandy shores, South Florida. — Stem 1° – 2° high. Leaves 1½′ – 2′ long. Corolla 2′ long, yellow.

3. **E. paludosa,** Vahl. Smooth, twining or floating, leaves oblong or lanceolate, thick, short-petioled; peduncles as long as the leaves, 1 – 3-flowered; calyx lobes oblong, acute; corolla 2′ long, funnel-shaped, white; follicles fusiform; seeds linear, plumose. — Muddy islets of the Caloosa River, South Florida. Oct. — Stem long. Leaves 3′ – 4′ long.

4. **E. Sagræi,** A.DC. Smooth, erect, very leafy; leaves from oval to linear-lanceolate, acute, rigid, the margins revolute; peduncles much longer than the leaves, racemosely several-flowered, the long pedicels single or by pairs; calyx lobes acuminate; corolla yellow, bell-shaped, with spreading lobes; anthers obtuse; seeds plumose. — Rocky places, Miami, South Florida (*Garber*). — Stem 1° high. Leaves and corolla 1′ long.

5. **E. difformis,** Walt. Leaves ovate-lanceolate to linear, acuminate, narrowed into a petiole, smooth, or, like the branchlets, pubescent when young; cymes spreading, as long as the leaves; flowers greenish. (Trachelospermum, *Gray*. Forsteronia, *A.DC*.) — River banks, Florida to North Carolina. May – August. — Stem twining, 10° – 15° high. Leaves 2′ – 3′ long. Corolla 4″ long. Follicles linear, 6′ – 9′ long.

3. AMSONIA, Walt.

Calyx small, 5-parted. Corolla funnel-form, 5-lobed, bearded within. Stamens inserted above the middle of the tube; anthers oblong, obtuse. Stigma globose, surrounded by a cup-shaped membrane. Follicles slender. Seeds in a single row, terete, truncated at each end, naked. — Erect branching perennial herbs, with alternate leaves, and small pale blue flowers in a terminal panicle.

1. **A. Tabernæmontana,** Walt. Stem smooth, branching above; leaves ovate, ovate-lanceolate, or lanceolate, glaucous beneath, short-petioled; tube of the corolla slender, smooth, or woolly above; follicles spreading. — Swamps and wet banks. May - June. — Stem 2° high. Leaves 1′ - 4′ long, often slightly pubescent beneath. Panicle open or contracted. Follicles 4′ - 6′ long.

2 **A. ciliata,** Walt. Stem hairy, at length much branched above; leaves very numerous, linear or linear-lanceolate, fringed on the margins; corolla smooth. — Dry sandy soil, Florida to North Carolina. April - May. — Stem at length 2° - 3° high. Leaves 1′ - 2′ long. Corolla pale blue or white.

4. VINCA, L. Periwinkle.

Calyx 5-parted. Corolla salver-form, 5-lobed, thickened or angular at the throat, the narrow tube hairy within. Anthers oblong, longer than the filaments. Glands 2, alternating with the ovaries. Style slender: stigma thick, with an inverted cup-shaped membrane at the base. Follicles 2, linear, erect. Seeds oblong, rough, naked. — Herbs or shrubby plants, with opposite short-petioled leaves, and axillary mostly solitary showy flowers.

1. **V. rosea,** L. Shrubby, pubescent; stem erect, branching; leaves oblong; flowers solitary or in pairs; corolla white or pale rose-color. — Waste ground. Introduced.

5. VALLESIA, Ruiz & Pavon.

Calyx 5-parted. Corolla salver-shaped, 5-lobed. Stamens inserted on the throat of the corolla: anthers cordate-ovate, longer than the slender filaments. Nectary none. Ovaries 4-ovuled. Stigma club-shaped. Drupe mostly solitary, obovoid, 1 - 2-seeded. Seeds naked, club-shaped, furrowed. Radicle thick, inferior. — Shrubs. Leaves alternate. Cymes long-peduncled, opposite the leaves.

1. **V. glabra,** Cav. Smooth; leaves lanceolate-oblong, acute at each end, short-petioled; cymes as long as the leaves, many-flowered; lobes of the corolla linear, shorter than the tube, hairy within; style slender; stigma 2-lobed, globose below the apex. — South Florida. — Leaves 1½′ - 2′ long. Corolla 3″ long. Drupe 4″ long, 1-seeded.

Order 96. ASCLEPIADACEÆ. (Milkweed Family.)

Erect or twining herbs or shrubs, with milky juice, entire commonly opposite leaves without stipules, and umbellate or cymose flowers. — Calyx 5-parted, persistent. Corolla 5-parted, mostly valvate in the bud, hypogynous, deciduous. Stamens 5, inserted on the base of the corolla, the filaments united in a tube (*gynostegium*) which encloses the ovaries, and bears appendages of various forms, which are collectively termed the *stamineal crown*. Anthers erect, 2–4-celled, expanding above into a thin membrane. Pollen united in flattened waxy pear-shaped masses, which are equal in number to the cells of the anthers, and fixed to the five angular processes of the stigma by a slender stalk, pendulous or horizontal. Styles 2, the thick and fleshy stigma common to both. Fruit a follicle. Seeds anatropous, imbricated on the thick at length free placenta, and commonly bearing at the hilum a tuft of hairs (*coma*). Embryo straight in thin albumen. Cotyledons leafy.

Synopsis.

Tribe I. **ASCLEPIADEÆ.** Pollen-masses 10, fixed by pairs to the cleft processes of the flat or conical stigma, pendulous.

* Stamineal crown single, 5-leaved.

+– Lobes of the corolla reflexed.

1. **ASCLEPIAS.** Leaves of the crown enclosing a horn-like appendage.
2. **ACERATES.** Leaves of the crown without appendages.

+– +– Lobes of the corolla erect or spreading.

++ Stem erect.

3. **PODOSTIGMA.** Lobes of the corolla erect. Stigma long-pedicelled.
4. **ANANTHERIX.** Lobes of the corolla spreading. Crown arching over the stigma.
5. **ASCLEPIODORA.** Lobes of the corolla spreading. Crown ascending.

++ ++ Stem twining.

= Herbaceous.

6. **ENSLENIA.** Leaves of the crown deeply cleft.
7. **METASTELMA.** Leaves of the crown entire.

= = Woody or fruticose.

8. **SEUTERA.** Stem fruticose. Stigma conical.
9. **AMPHISTELMA.** Stems woody. Stigma flat.

* * Stamineal crown double.

10. **PHILIBERTIA.** Exterior crown annular; the interior 5-leaved.

Tribe II. **GONOLOBEÆ.** Pollen-masses 10, fixed by pairs at the angles of the depressed stigma, horizontal.

11. **GONOLOBUS.** Crown simple, annular. Stems twining. Leaves cordate.

1. ASCLEPIAS, L. Milkweed, Silkweed.

Calyx 5-parted. Corolla wheel-shaped, deeply 5-parted, reflexed. Crown composed of 5 hooded leaves, each containing an incurved horn-like appendage. Pollen-masses 10, by pairs, each pair occupying the contiguous cells of adjacent anthers, and suspended by a slender stalk from the projecting angles of the stigma. Follicle many-seeded. Seeds obovate, flat, usually comose. — Perennial herbs, with mostly simple (not twining) stems, and opposite alternate or whorled leaves. Flowers in lateral (between the leaves) and terminal umbels.

* *Leaves opposite.*

+– *Cordate.*

1. **A. Cornuti,** Decaisne. Softly pubescent; stem stout, erect; leaves oval-oblong; umbels numerous, many-flowered, long-peduncled; corolla greenish purple; leaves of the crown pale purple, ovate, obtuse, longer than the incurved horn; follicle ovate-oblong, woolly, armed with soft spines. — Fields and roadsides, North Carolina (*Croom*), and northward. June – July. — Stem 3° – 4° high. Leaves 4′ – 8′ long. Corolla ½′ wide.

2. **A. rubra,** L. Smooth; stem naked at the summit; leaves ovate or ovate-lanceolate, acuminate; umbels single, or 1 – 3 in a terminal cluster, few-flowered; corolla reddish purple; leaves of the crown oblong, acute, purplish, barely longer than the subulate incurved horn, twice as long as the short-stalked gynostegium; follicle smooth. — Wet pine barrens, Georgia, and northward. June – July. — Stem 2° – 4° high. Leaves 2′ – 4′ long.

3. **A. obtusifolia,** Michx. Smooth and somewhat glaucous; stem erect; leaves oblong, undulate, partly clasping; umbels 1 – 3, long-peduncled, many-flowered; corolla greenish purple; leaves of the crown truncated and somewhat toothed at the apex, rather longer than the gynostegium, much shorter than the subulate incurved horn; follicle smooth. — Sandy soil. June – July. — Stem 2° – 3° high. Leaves 2′ – 3′ long. Corolla lobes 3″ long.

4. **A. amplexicaulis,** Michx. Smooth and glaucous; stem decumbent, very leafy; leaves large, fleshy, ovate, clasping, white-veined; umbels 3 – 6, many-flowered; corolla ash-color; leaves of the crown oval, obtuse, white, longer than the gynostegium, and the nearly straight horn. — Dry sandy pine barrens in the lower districts. April – May. — Stems several, 1° – 2° long. Leaves 4′ – 5′ long.

+– +– *Leaves contracted into a petiole.*

++ *Oval, oblong, or obovate.*

5. **A. phytolaccoides,** Pursh. Stem tall, smooth; leaves ovate or ovate-lanceolate, tapering at each end, paler beneath, membranaceous; umbels 2 – 4, long-peduncled, many-flowered; pedicels drooping; corolla pale greenish: leaves of the crown white, truncated, 2-toothed, shorter than the subulate incurved horn. — Low grounds along the mountains. June – July. — Stem 3° – 5° high. Leaves 6′ – 9′ long. Pedicels 2′ – 3′ long.

6. **A. purpurascens,** L Stem smooth; leaves ovate-oblong, acute, short-petioled, paler and pubescent beneath; umbels 1 – 2, many-flowered; corolla dark purple; leaves of the crown oblong, abruptly contracted above, twice as long as the incurved horn and nearly sessile gynostegium. — Thickets and borders of woods, Tennessee, North Carolina, and northward. June – July. — Stem 2° – 3° high. Leaves 4′ – 7′ long. Pedicels 9″ – 15″ long, pubescent.

7. **A. variegata,** L. Stem stout, leafless below, pubescent in lines; leaves oval, oblong, or obovate, smooth; umbels 3 – 5, pubescent, closely flowered, the upper ones corymbose; corolla white; leaves of the crown roundish, longer than the purplish gynostegium, equalling the thick awl-pointed incurved horn. — Dry open woods and borders of fields. May – June. — Stem 2° – 3° high, purplish. Leaves rather thick, 2′ – 3′ long. Peduncles 9″ – 12″ long.

8. **A. incarnata,** L., var. **pulchra,** Pers. Hairy; stem erect, branching; leaves oblong or oblong lanceolate, acute, nearly sessile; umbels numerous, somewhat corymbose, long-peduncled, often compound; corolla small, reddish purple; leaves of the crown flesh-color, ovate, as long as the slender incurved horns, and twice as long as the short-stalked gynostegium. — Swamps in the upper districts. June – July. — Stem 3° – 4° high. Leaves 4′ – 6′ long.

9. **A. tomentosa,** Ell. Pubescent or villous; stem stout, very leafy; leaves oblong or oblong-lanceolate, undulate, abruptly short-petioled; umbels 4 – 10, alternate, nearly sessile, many-flowered; pedicels three times as long as the large greenish corolla; leaves of the crown obovate, truncated, shorter than the gynostegium and the broad abruptly pointed erect horn. — Dry sandy pine barrens, Florida to North Carolina. June – July. — Stem 1° – 4° high. Leaves 2′ – 3′ long. Pedicels 1′ long. Corolla ½′ wide. Follicles lanceolate, tomentose, 4′ – 6′ long.

10. **A. obovata,** Ell. Tomentose; stem stout, very leafy; leaves nearly sessile, thick, oblong-oval or obovate, undulate; umbels nearly sessile, closely 10 – 14-flowered; corolla yellowish green; leaves of the crown purplish, twice as long as the gynostegium, and equalling the incurved horn; follicle tomentose. — Dry gravelly or sandy soil, Georgia, Florida, and westward. June – July. — Stem 1° – 2° high.

11. **A. Curtissii,** Gray. Stem puberulous (1° – 3° high); leaves smooth, oval, 1½′ long; umbel solitary, terminal, short-peduncled, loosely few-flowered; flowers yellowish green; leaves of the crown somewhat hastate-lanceolate, erect, more than twice as long as the gynostegium and the incurved horn; anther wings very broad. — Eastern part of South Florida (*Curtiss*).

++ ++ *Leaves lanceolate or linear.*

12. **A. Simpsoni,** Chapm. Stem pubescent; leaves filiform; umbels 2, few-flowered, the peduncles longer than the leaves; corolla 1″ long, whitish; leaves of the crown obliquely truncate, as long as the slender-stiped gynostegium, and half as long as the filiform incurved horns; anthers membranaceous. — Low pine barrens, Manatee, South Florida.

13. **A. cinerea,** Walt. Stems erect, slender, pubescent in lines; leaves narrowly linear; umbels 3 – 6, 5 – 7-flowered, the drooping pedicels longer than the peduncle; flowers ash-color; leaves of the crown obliquely truncated, 2-toothed at the inner angle, shorter than the gynostegium, longer than the thick horn; follicle smooth, linear. — Flat pine barrens, Florida to South Carolina. June – Sept. — Stem 1° – 2° high. Leaves 2′ – 3′ long. Corolla 3″ – 4″ wide. Follicle 3′ – 4′ long.

14. **A. viridula,** Chapm. Stem slender, pubescent in lines; leaves linear, erect; umbels shorter than the leaves, 6 – 12-flowered, the erect or spreading pedicels as long as the peduncle; corolla yellowish green; leaves of the crown oblong, spreading at the apex, rather longer than the erect subulate horn, and twice as long as the gynostegium; follicle smooth, linear. — Pine barren swamps, West Florida. June – July. — Stem 10′ – 15′ high. Leaves 2′ long. Corolla 3″ wide. Follicle 3′ long. Juice not milky.

15. **A. paupercula,** Michx. Stem smooth, tall; leaves elongated, linear or linear-lanceolate, the upper small and remote; umbels 2 – 5, corymbose,

6 – 10-flowered; corolla red; leaves of the crown oblong, erect, bright orange, more than twice as long as the subulate incurved horn, and the short-stalked gynostegium; follicle lanceolate, minutely pubescent. — Marshes, Florida, and northward. June – July. — Stem 2° – 4° high. Leaves 6′ – 12′ long. Corolla 3″ – 4″ long.

16. **A. Curassavica,** L. Stem somewhat shrubby, branching, slightly pubescent; leaves lanceolate, acuminate, smooth; umbels corymbose, long-peduncled, 8 – 10-flowered, pubescent; corolla scarlet; leaves of the crown bright orange, oblong, erect, longer than the stalked gynostegium, shorter than the thick incurved horn; follicle ovate-lanceolate, velvety. — South Florida. April – Nov. — Stem 1° – 2° high. Leaves 3′ – 4′ long. Corolla 3″ long.

17. **A. perennis,** Walt. Stem branched, pubescent in lines, shrubby at the base; leaves thin, lanceolate or oblong-lanceolate, tapering at each end; umbels 5 – 7, long-peduncled, pubescent, the upper corymbose; corolla small, white; leaves of the crown spreading, half as long as the needle-shaped, erect horn; follicle ovate-lanceolate, smooth. — Muddy banks of rivers, Florida to South Carolina. June – August. — Stem 1° – 2° high. Leaves 2′ – 4′ long.

+ + + + *Upper and lower leaves mostly opposite, the middle ones whorled.*

18. **A. quadrifolia,** Jacq. Somewhat pubescent; stem slender, simple; leaves thin, ovate or ovate-lanceolate; umbels 2 – 5, many-flowered; corolla pale pink; leaves of the crown white, oblong, obtuse, twice as long as the gynostegium and stout horn. — Mountains of Carolina and Georgia. June – August. — Stem 1° – 1½° high. Leaves 2′ – 3′ long.

19. **A. verticillata,** L. Stem slender, branching, pubescent; leaves narrowly linear, with the margins revolute, 4 – 5 in a whorl; umbels several; corolla greenish; leaves of the crown white, roundish, half as long as the slender incurved horn. — Open woods and fence-rows. July – Sept. — Stem 2° – 3° high. Leaves 1′ – 2′ long. Follicle smooth.

+ + + + + *Leaves alternate, or the lowest opposite.*

20. **A. tuberosa,** L. Hirsute; stem erect or declining, widely branched above, very leafy; leaves from linear to oblong, short-petioled; umbels numerous, corymbose; corolla yellowish orange; leaves of the crown bright orange, erect, oblong-lanceolate, twice as long as the gynostegium, and rather longer than the slender incurved horn. — Light dry soil, common. June – July. — Stem 1° – 2° long.

21. **A. angustifolia,** Ell. Pubescent; stems several, prostrate; leaves linear, erect, the lower ones mostly opposite; umbels 1 – 3, terminal; flowers gray and purple; leaves of the crown ovate, spreading, as long as the subulate horn, and longer than the gynostegium; follicle long, linear-lanceolate tomentose. — Low sandy pine barrens, Florida to South Carolina. April – May. — Stems 6′ – 12′ long. Leaves 3′ – 4′ long. Follicle 4′ – 5′ long. Flowers fragrant.

2. ACERATES, Ell.

Leaves of the crown destitute of a horn-like appendage. Otherwise like Asclepias.

1. **A. viridiflora,** Ell. Pubescent; stem stout, simple; leaves from oval or obovate to lanceolate, undulate; umbels lateral and terminal, nearly sessile, densely many-flowered; flowers small, greenish; leaves of the crown oblong, erect, as long as the sessile gynostegium. — Dry sterile soil. June–July. — Stem 1° – 1½° high. Leaves 1½′ – 2½′ long.

2. **A. longifolia,** Ell. Pubescent; stem terete; leaves linear and linear-lanceolate; umbels slender-peduncled, many-flowered; flowers small, pale purple; leaves of the crown deep purple, oval, shorter than the gynostegium, and adnate to its stalk; follicle lanceolate, tomentose. — Low pine barrens. July. — Stem 1° – 1½° high. Leaves 3′ – 6′ long. Corolla 4″ wide.

3. PODOSTIGMA, Ell.

Calyx 5-parted. Corolla 5-parted, with the lobes erect. Leaves of the crown destitute of a horn, ascending, incurved-beaked at the apex, united with the base of the long and slender gynostegium. Stigma small, depressed. Seeds comose. — A low pubescent simple-stemmed perennial herb, with opposite lanceolate sessile leaves, and few-flowered umbels on lateral peduncles.

1. **P. pubescens,** Ell. — Low pine barrens, Florida to North Carolina. June – Oct. — Root tuberous. Stem 6′ – 12′ high. Leaves erect, 1′ – 2′ long. Umbels of 4 – 6 orange-colored flowers. Corolla 4″ – 5″ long, the oblong lobes wavy on the margins. Follicles linear-lanceolate, tomentose, 4′ – 6′ long. Seeds oval, winged.

4. ANANTHERIX, Nutt.

Leaves of the crown longer than the corolla, oblong-clavate, obtuse, arching over the sessile gynostegium, slightly crested. Anther-wings not thickened. Pollen-mass oblong, half the length of the very slender stalk. Otherwise like Asclepias.

1. **A. connivens,** Gray. Stem stout, simple, pubescent above; leaves oblong or oblong-obovate, the upper smaller and lanceolate; umbels 3 – 6, 6 – 9-flowered, pubescent; flowers large, greenish; leaves of the crown twice as long as the gynostegium. — Wet pine barrens, Florida and Georgia. June – July. — Stem 1° – 2° high. Leaves 1′ – 2′ long. Corolla 8″ – 10″ wide.

5. ASCLEPIODORA, Gray.

Calyx 5-parted. Corolla rotate. Leaves of the crown spreading, longitudinally crested within. Anthers with thickened margins, membranous at the summit. Gynostegium sessile. Pollen-grains pear-shaped, longer than the stalk.

* *Crown leaves arcuate-spreading, crested above the middle, incurved at the point: anthers rounded at the base, as long as the gynostegium.*

1. **A. viridis,** Gray. Closely pubescent; stem angular, often branching; leaves alternate, oblong, short-petioled; umbels corymbose, often compound; corolla large, greenish; leaves of the crown oblong, shorter than the nearly sessile gynostegium. — Dry soil, Florida to South Carolina. July. — Stem 1° – 1½° high, leafy to the summit. Leaves 3′ – 4′ long. Corolla 1′ wide.

* * *Crown leaves spreading, open above, crested below the middle, obtuse: anthers sagittate, membranous above, curving over the gynostegium.*

2. **A. Feayi.** Stem slender, 6′ – 18′ high; leaves opposite, almost filiform, 2′ – 3′ long; umbels 2 – 3, approximate, few-flowered, the pedicels longer than the peduncle; flowers white, 3″ – 4″ long; crown as long as the sessile gynostegium. (Asclepias, *Gray.*) — South Florida, near the coast.

6. ENSLENIA, Nutt.

Calyx 5-parted. Corolla bell-shaped, 5-parted: crown inserted on the base of the gynostegium, 5-leaved, each leaf deeply cleft, with the lobes prolonged into a slender flexuous point. Stigma subconical. Follicle fusiform. Seeds comose, flat. — A perennial twining vine, with opposite cordate-ovate acuminate leaves, and small white fragrant flowers in axillary umbels or corymbs.

1. **E. albida,** Nutt. — River banks, Georgia, Alabama, and northward. July.

7. METASTELMA, R. Brown.

Calyx 5-parted. Corolla bell-shaped, the lobes mostly hoary-pubescent within. Crown 5-leaved, inserted on the base or on the summit of the gynostegium. Stigma flat. Follicles slender, smooth. Seeds comose. — Twining shrubs, with smooth leaves. Umbels few-flowered. Flowers small, white.

1. **M. Bahamense,** Griseb. Branches pubescent; leaves oblong or obovate, cuspidate, on slender petioles; peduncles 3 – 6-flowered, as long as the petiole, shorter than the pedicels; sepals obtuse, ciliate; lobes of the corolla ovate lanceolate, incurved; leaves of the crown oblong, inserted on the summit of the slender gynostegium, as long as the stigma. — South Florida. — Leaves ½′ – 1½′ long, the margins revolute. Corolla 2″ long. Gynostegium 5-winged at the base.

2. **M. Blodgettii,** Gray. Herbaceous? stem very slender, pubescent in lines; leaves smooth, linear-lanceolate, falcate, acuminate, short-petioled, drooping; umbels sessile or short-peduncled, 4 – 6-flowered; sepals smooth, acute; lobes of the corolla linear, incurved at the apex; leaves of the crown inserted on the base of the sessile gynostegium, linear, erect, exceeding the stigma. — South Florida. — Leaves 6″ – 8″ long. Corolla 1″ long.

8. SEUTERA, Reich.

Calyx 5-parted. Corolla somewhat wheel-shaped, 5-parted, with narrow acute smooth lobes. Crown simple, deeply 5-parted, inserted on the base of the sessile conical gynostegium; the lobes ovate. Follicles smooth. Seeds comose. — A slender partly shrubby twining vine, with fleshy linear drooping leaves, and long-peduncled umbels of greenish flowers.

1. **S. maritima,** Decaisne. — Salt marshes. July – August. — Stem shrubby at the base; the branches twining around rushes and saline grasses. Leaves 2′ long. Peduncles commonly longer than the leaves, many-flowered. Lobes of the corolla lanceolate, of the crown obtuse.

9. AMPHISTELMA, Griseb.

Calyx 5-parted. Corolla minute, rotate; crown obtusely 5-parted. Pollen-masses ovoid. Gynostegium sessile, shorter than the crown, flat. Follicles divaricate, linear. Seeds comose. — A woody vine.

1. **A. filiforme,** Griseb. Stems much-branched, pubescent in lines; leaves thin, linear, smoothish; umbels nearly sessile, few-flowered; calyx lobes ovate; corolla smooth, the spreading lobes lanceolate, obtuse; crown shorter than the gynostegium; follicles very slender; seeds linear, wingless. — Dry rich soil near the coast, Florida. — Leaves ½′ – 1′ long. Flowers green, less than a line long. Follicles 1′ long.

10. PHILIBERTIA, HBK.

Calyx 5-parted. Corolla wheel-shaped, 5-parted. Crown double; the exterior forming a ring at the base of the corolla; the interior longer, 5-leaved. Stigma pointed, notched. Follicles slender, smooth. Seeds comose. — Erect or twining herbs. Leaves often cordate. Flowers yellow or white, in lateral umbels.

1. **P. viminalis,** Gray. Stem smooth and twining; leaves nearly sessile, oblong, mucronate, rounded at the base; peduncles stout, 8 – 12-flowered, 2 – 3 times as long as the leaves and pedicels; lobes of the corolla ovate, obtuse, spreading; the outer surface, like the calyx and pedicels, pubescent; leaves of the inner crown oval, rather exceeding the stigma and anthers. — South Florida. — Leaves somewhat fleshy, 9″ – 12″ long. Corolla 3″ wide. Ovary villous.

11. GONOLOBUS, Michx.

Calyx 5-parted, spreading. Corolla wheel shaped, 5-parted, the lobes spreading, twisted in the bud. Crown a wavy-lobed ring at the throat of the corolla. Gynostegium flattened, depressed. Anthers opening transversely. Pollen-masses horizontal. Follicles inflated, angled, and often armed with soft spines. Seeds comose. — Twining herbs, with opposite petiolate cordate leaves, and yellowish or purplish flowers, in lateral corymbs or umbels.

* *Follicles spineless, ribbed.*

1. **G. macrophyllus,** Michx. Hairy; leaves oblong-ovate, cordate, abruptly acuminate; umbels peduncled, several-flowered; pedicels spreading, unequal, shorter than the petioles; corolla dull purplish, conical in the bud; the lanceolate obtuse lobes more or less pubescent within, green at the apex; follicle strongly ribbed. — Low thickets. July – August. — Leaves 2′ – 6′ long.

2. **G. suberosus,** R. Br. Leaves cordate, acuminate, minutely pubescent or smoothish; umbels 3 – 9-flowered, much shorter than the petiole; corolla broadly conical in the bud, twisted, the lobes triangular-lanceolate, dusky, minutely pubescent within, but sometimes smooth, hardly double the length of the calyx lobes; crown 10-crenate (*Gray*). — Near the coast, Virginia to Florida.

* * *Follicles spiny.*

3. **G. Shortii,** Gray. Hirsute and downy; leaves broadly cordate, 4′–6′ long; umbels mostly compound and many-flowered long-peduncled; corolla 1′ wide, dull purplish brown, the oblong-linear lobes obtuse; crown nearly equally 10-lobed; follicle fusiform, spiny, 4′–5′ long. — Low woodlands, North Georgia and Tennessee. June. — Odor of decaying fish.

4. **G. hirsutus,** Michx. Pubescent and hirsute; leaves ovate, cordate, acuminate; peduncle of the 6–8-flowered umbel equalling or shorter than the petiole; corolla dark purple, ovate in the bud, the oval or oblong lobes smooth within; margins of the crown 10-crenate; "follicle muricate." — Woods, Florida, and northward.

5. **G. obliquus,** R. Br. Leaves broadly cordate, short-acuminate, or mucronate-pointed; umbel simple or compound, long-peduncled; corolla crimson-purple, long-conical in the bud, the linear lobes smoothish within; margins of the crown 10-crenate; follicle terete, muricate. — Rocky woods, North Georgia, and northward. July.

6. **G. Carolinensis,** R. Br. Leaves cordate, acuminate; peduncle rather longer than the petiole; corolla brownish purple, oblong in the bud, the oblong lobes smooth within; crown obtusely 5-lobed, and with a longer bifid process in the sinuses. — South Carolina, and westward.

7. **G. Baldwinianus,** Sweet. Stem and cordate leaves pubescent and hairy; peduncles mostly longer than the petioles; umbel simple or compound; flowers oblong-oval in the bud, white, the lobes somewhat spatulate; crown 5-crenate, with a pair of subulate processes in the sinuses. — Calcareous soil, Florida and Alabama. July.

8. **G. flavidulus,** Chapm. Hirsute; leaves round-ovate, cordate, abruptly acute; umbels about as long as the petioles; corolla yellowish green, ovate in the bud, the ovate obtuse lobes pubescent without; follicles armed with soft spines. — Light rich soil, Middle Florida. — Leaves 4′–6′ long.

9. **G. pubiflorus,** Engelm. Stem dividing at the base into many divaricate branches, 6′–12′ long, hairy; lower leaves round-cordate, the upper acute, all slightly hairy on both sides, and ciliate; umbels axillary, 3–5-flowered; corolla small, purplish, villous within, the lobes ovate, obtuse; follicles oval, spiny. — Sand-hills near the Altamaha River, Georgia. Orange County, Florida (*Fred. L. Lewton*).

ORDER 97. OLEACEÆ. (OLIVE FAMILY.)

Trees or shrubs, with opposite entire or pinnate exstipulate leaves, and perfect polygamous or diœcious flowers. — Calyx 4-toothed. Corolla 4-lobed or 4-petalous, valvate or imbricate in the bud, sometimes wanting. Stamens 2–4. Ovary 2-celled, with 2 suspended anatropous ovules in each cell. Style single or none. Fruit 1–2-seeded. Embryo straight, in hard albumen.

Synopsis.

Tribe I. **OLEINEÆ.** Fruit a drupe or berry. Flowers with both calyx and corolla. Leaves simple, entire.

1. OSMANTHUS. Flowers polygamous Corolla salver-shaped, with short lobes.
2. CHIONANTHUS. Flowers perfect. Corolla wheel-shaped, with elongated lobes.

Tribe II. **FRAXINEÆ.** Fruit a samara. Flowers diœcious, apetalous. Leaves pinnate.

3. FRAXINUS. Flowers in lateral and terminal panicles. Calyx minute or rarely wanting. Trees.

Tribe III. **FORESTIEREÆ.** Fruit a drupe. Flowers diœcious or perfect, apetalous. Leaves simple.

4. FORESTIERA. Flowers mostly diœcious, from scaly axillary buds. Shrubs.

1. OSMANTHUS, Loureiro.

Calyx 4-toothed. Corolla short-salver-form, 4-lobed. Stamens 2. Style short. Stigma globose or 2-lobed. Drupe mostly 1-seeded, oily. — Trees or shrubs, with opposite coriaceous entire leaves, and small white fragrant flowers, in axillary racemes or panicles.

1. **O. Americanus,** Benth. & Hook. Smooth; leaves oblong or obovate-oblong, narrowed into a petiole; racemes compound, shorter than the leaves; flowers polygamo-diœcious, bracted; drupe ovoid, dark purple. — Light soil, near the coast, Florida to North Carolina. March – April. — A shrub or small tree, with whitish bark and evergreen leaves. Drupe as large as a pea, bitter and astringent.

2. **O. Floridanus,** Chapm. Inflorescence more or less pubescent; style sigmoid; stigma nearly as broad as the ovary; drupe ovoid, yellowish-green, 8″ – 9″ long. Otherwise like the preceding. — Sandy pine barrens, Manatee, South Florida (*J. H. Simpson*). — A low shrub.

2. CHIONANTHUS, L. Fringe Tree.

Calyx small, 4-cleft. Corolla wheel-shaped, 4-parted, with long and linear lobes. Stamens 2 – 4, included. Style very short: stigma notched. Drupe fleshly, 1-seeded. — A shrub, with oblong entire deciduous leaves, and delicate white flowers in slender axillary panicles, appearing with the leaves.

1. **C. Virginica,** L. — Light soil, Florida, and northward. April – May. — Shrub 6° – 10° high. Leaves smooth or pubescent, narrowed into a petiole. Panicles longer than the leaves, leafy-bracted. Flowers on slender drooping pedicels. Corolla lobes 1′ long. Drupe ovoid, purple.

3. FRAXINUS, Tourn. Ash.

Flowers diœcious and (in ours) apetalous. Calyx 4-lobed or toothed, minute, sometimes wanting. Stamens 2 – 4: filaments shorter than the large anthers. Stigma 2-cleft. Fruit (samara) dry, winged above, 1 – 2-seeded. Cotyledons elliptical. Radicle slender. — Trees. Leaves petioled odd-pinnate, deciduous.

* *Fruit naked and terete or barely margined and 2-edged at the base, winged above: leaflets* 7 – 9, *stalked.*

1. **F. Americana,** L. (WHITE ASH.) Branches and petioles smooth; leaflets ovate-oblong or lanceolate-oblong, acuminate, entire, or slightly serrate above, smooth on the upper surface, pubescent or glaucous beneath; fruit terete, striate, dilated at the apex into a cuneate-linear or lanceolate obtuse or notched wing. — Low woods. April. — A large tree. Leaflets 2′ – 4′ long. Fruit 1½′ long.

2. **F. pubescens,** Lam. (RED ASH.) Branchlets and petioles velvety-pubescent; leaflets oblong-ovate or ovate-lanceolate, gradually acuminate, bright green above, pale and more or less pubescent beneath; fruit acute at the base, flattish, and somewhat 2-edged, gradually dilated upwards into a long lanceolate often notched wing. — Swamps, Florida, and northward. March – April. — A small or middle-sized tree.

3. **F. viridis,** Michx. (GREEN ASH.) Glabrous throughout; leaflets ovate or oblong-ovate, more or less toothed, smooth and green both sides; fruit as in No. 2, of which it may be a variety. — Swamps. March – April. — A large tree.

* * *Fruit winged all round the seed-bearing portion: leaflets* 5 – 9, *short-stalked.*

4. **F. quadrangulata,** Michx. (BLUE ASH.) Branchlets square, smooth; leaflets oblong-ovate or oblong, acuminate, sharply serrate, when young pubescent beneath; fruit linear-oblong, obtuse at both ends. — Tennessee, and northward. May.

5. **F. platycarpa,** Michx. (WATER ASH.) Branchlets terete, smooth or pubescent; leaflets ovate or elliptical, serrate or almost entire, often pubescent beneath; fruit broadly winged, oblong-obovate or oblong with a tapering acute base, sometimes 3-winged. — Deep river swamps in the lower districts. March – April. — A small tree.

6. **F. pauciflora,** Nutt. Branches terete, glabrous; leaflets 5 – 7, oblong, acuminate at both ends, sharply serrulate, 1′ – 2′ long, the slender petioles long and spreading; racemes few-flowered; fruit 1½′ long, oblong-obovate, acute, broadly winged. — Miry river banks, Georgia and Florida. — A shrub or small tree.

4. FORESTIERA, Poir. (ADELIA, *Michx.*)

Flowers diœcious or polygamous, from axillary scaly buds. Corolla none. Calyx minute, 4-lobed. Sterile flowers single or 3 together in the axils of imbricated scaly bracts. Stamens 3 – 7. Fertile flowers peduncled. Styles slender. Stigma capitate. Ovary 2-celled. Drupe ovoid, 1-seeded, black or blue. — Shrubs. Leaves opposite, petioled, serrulate. Flowers minute, greenish, preceding the leaves.

1. **F. porulosa,** Poir. Leaves coriaceous, smooth at maturity, nearly sessile, ovate-lanceolate or oblong, obtuse, entire, punctate underneath, the margins revolute; drupe short-ovoid. — Coast of East Florida.

2. **F. ligustrina,** Poir. More or less pubescent; the branchlets roughened with fine tubercles; leaves rather membranaceous, obovate or obovate-

oblong, mostly obtuse, serrulate (1′ long), contracted at the base into a distinct petiole; drupe oval-oblong. — Rocky banks, Florida, Georgia, and westward.

3. **F. pubescens,** Nutt. Differs from the last only in its denser pubescence, longer pedicelled drupe, and striate nut. — With the preceding.

4. **F. acuminata,** Poir. Glabrous or slightly pubescent when young; branchlets sometimes spinescent; leaves (2′ – 3′ long) ovate-lanceolate or ovate and tapering-acuminate at both ends, somewhat serrulate, slender-petioled; drupe elongated-oblong, mostly pointed when young. — Wet grounds, Georgia to Tennessee, and northwestward.

ORDER 98. HYDROPHYLLACEÆ. (WATERLEAF FAMILY.)

Herbs, with alternate or (the lowest) opposite leaves, and regular flowers, either solitary in the axils, or in 1-sided recurved spikes or racemes. — Calyx 5-parted, persistent. Corolla 5-lobed, convolute or imbricate in the bud. Stamens 5, inserted on the base of the corolla, and alternate with its lobes. Ovary 1-celled, with 2 parietal placentæ, or 2-celled by the introversion of the placentæ, each bearing 2 or more ovules. Styles 2, separate or more or less united. Capsule 2-valved. Seed reticulated. Embryo small, in hard or fleshy albumen.

Synopsis.

TRIBE I. **HYDROPHYLLEÆ.** Capsule 1-celled. Styles partly united. Albumen cartilaginous. Leaves pinnately or palmately lobed.

* Lobes of the corolla convolute in the bud.

1. HYDROPHYLLUM. Calyx without appendages. Stamens exserted. Stems erect.
2. NEMOPHILA. Calyx appendaged at the sinuses. Stamens included. Stems prostrate.

* * Lobes of the corolla imbricated in the bud.

3. PHACELIA. Calyx without appendages. Capsule 4 – many-seeded.

TRIBE II. **HYDROLEÆ.** Capsule 2-celled. Styles separate. Albumen fleshy. Leaves entire.

4. HYDROLEA. Corolla rotate. Capsule globose.
5. NAMA. Corolla funnel- or salver-shaped. Capsule oblong.

1. HYDROPHYLLUM, L. WATERLEAF.

Calyx 5-parted, the lobes subulate; without appendages. Corolla broadly tubular, 5-cleft, with 5 linear appendages opposite the lobes. Stamens and style exserted: anthers linear. Ovary hispid. Placentæ thick and fleshy, connected with the pericarp at the base and apex; each 2-ovuled. Style filiform, 2-cleft. Capsule globose, 2-valved, 1 – 4-seeded. — Erect perennial mostly hairy herbs, with long-petioled pinnately or palmately divided leaves, and white or blue flowers in peduncled cymes, without bracts.

1. **H. Virginicum,** L. Stem leafless below, sprinkled, like the leaves, with rigid hairs; leaves pinnately divided into 5 – 7 ovate cleft or toothed lobes, paler beneath; peduncles forking, longer than the petioles; cymes

dense; calyx lobes linear, hispid; filaments slightly hairy. — Low woods along the mountains, Georgia, and northward. June. — Stem 1° – 2° high.

2. **H. Canadense,** L. Smoothish; leaves orbicular-cordate, palmately 5 – 7-lobed, sharply toothed; cymes dense, on forking peduncles which are shorter than the petioles; calyx lobes sparingly hispid; filaments densely bearded. — Mountains of Georgia, and northward. June. — Stem 1° high. Leaves 3′ – 5′ in diameter. Corolla white.

3. **H. macrophyllum,** Nutt. Hirsute; stem stout (1° – 2° high); leaves long (6′ – 10′), pinnatifid, with distinct oval toothed lobes, the upper lobes confluent; peduncle shorter than the petiole; cyme compact; calyx lobes lanceolate-subulate; corolla white. — Rich woods, Northern Alabama and Mississippi, and northward.

4. **H. appendiculatum,** Michx. Hirsute, erect, branching (1° high), lowest leaves pinnately divided, with toothed lobes, the others palmately 5-lobed; peduncles longer than the leaves, the cyme loosely flowered; calyx with short reflexed appendages between the subulate lobes; corolla blue. — Damp woods, mountains of North Carolina and Tennessee. May.

2. NEMOPHILA, Nutt.

Calyx 5-parted, with reflexed appendages in the sinuses. Corolla tubular or short bell-shaped, with 10 scale-like appendages at the base of the filaments. Stamens included: anthers ovoid. Ovary hispid, 2 – 12-ovuled. Placentæ large, lining the walls of the pericarp. Style 2-parted. Capsule globose, 1 – 2-seeded. — Tender prostrate annual herbs, with divided leaves, and solitary long-peduncled flowers opposite the leaves.

1. **N. microcalyx,** Fisch. & Meyer. Pubescent, or at length smoothish; stem filiform, diffuse; leaves thin, long-petioled, 3-lobed; the lowest mostly opposite, and 3 – 5-lobed; flowers minute, white; ovary 4-ovuled; capsule 1 – 2 seeded. — Shady woods, Florida, Georgia, and westward. April – June. — Stem 3′ – 1° long. Leaves ½′ – 1′ long. Corolla 1″ long. Seeds bony.

3. PHACELIA, Juss.

Calyx 5-parted, not appendaged in the sinuses. Corolla bell-shaped, 5-lobed, imbricated in the bud. Stamens included or exserted: anthers ovoid or oblong. Ovary 2 – many-ovuled; the 2 narrow placentæ often projecting inwards, and forming an imperfect partition in fruit. Style 2-cleft. Capsule 2-valved, 4 – many-seeded. — Low chiefly annual herbs, with alternate mostly pinnately divided leaves, and white or blue flowers in one-sided racemes.

§ 1. PHACELIA. — *Ovules and seeds* 4: *corolla variously appendaged within, the lobes entire.*

1. **P. bipinnatifida,** Michx. Hairy; stem erect, much branched; leaves long-petioled, 3 – 5-lobed, with the lobes oblong-ovate, acutely toothed; the lower ones short-stalked, the upper confluent; racemes loosely many-flowered, glandular; pedicels slender, recurved in fruit; calyx lobes linear, hispid; stamens bearded below, longer than the corolla. — Shaded banks in the upper districts. May – June. — Stem 6′ – 12′ high. Corolla blue, ½′ wide.

Var. **brevistylis,** Gray. Flowers smaller; stamens and style not longer than the corolla. — Alabama (*Buckley*).

§ 2. Cosmanthus. — *Ovules and seeds* 4: *corolla not appendaged within, the lobes fimbriate: filaments hairy below.*

2. **P. Purshii,** Buckley. Stems erect or ascending, clustered, smooth or hairy, branched; leaves hirsute; the lower ones petioled, almost pinnate, the upper clasping, pinnatifid, with the lobes acute; racemes many-flowered; calyx lobes lanceolate-linear, bristly ciliate; corolla blue. (P. fimbriata, *Pursh.*) — Shady banks in the upper districts. May – June. — Stem 8′ – 12′ high. Corolla ½′ wide.

3. **P. fimbriata,** Michx. Smoothish or slightly hairy; stems spreading or ascending; leaves few, the lowest petioled, with 3 – 5 roundish leaflets; the upper ones pinnately 5 – 7-lobed, with the lobes obtuse; racemes 3 – 10-flowered; calyx lobes linear-oblong, obtuse; corolla white. — High mountains of North Carolina. May. — Stems 5′ – 8′ long.

Var.? **Boykini,** Gray. "More robust; racemes rather many-flowered, at length strict, with fruiting pedicels erect and not longer than the calyx; corolla far less fimbriate, bluish." — Upper Georgia (*Boykin*).

§ 3. Comanthoides. — *Ovules commonly more than* 4: *corolla usually with minute appendages within, the lobes entire.*

4. **P. parviflora,** Pursh. Pubescent; stems several, spreading, branching; leaves petioled; the lowest 3 – 7-lobed, the upper 3-parted; racemes loosely 5 – 15-flowered; pedicels slender, much longer than the calyx; calyx lobes linear-oblong, bristly-ciliate; corolla small, pale blue or white. — Shady banks, Georgia, and northward. April – May. — Stems 3′ – 8′ high. Corolla 3″ – 4″ wide. Capsule few-seeded.

Var. **hirsuta,** Gray. More hirsute, with stouter stems, and larger (5″ – 7″ wide) corolla. — Stone Mountain, Georgia.

4. HYDROLEA, L.

Calyx 5-parted. Corolla short, bell-shaped, 5-cleft; the lobes spreading. Stamens somewhat exserted, with the filaments dilated at the base: anthers sagittate. Styles 2 (rarely 3), separate. Capsule globose, 2-celled, or imperfectly 4-celled by the introversion of the placentæ, 2-valved. — Herbs, growing in water or muddy places, with entire leaves, often with spines in their axils, and blue axillary or corymbose flowers.

1. **H. corymbosa,** Ell. Spineless; stem erect, hirsute and branching above; leaves ovate-lanceolate, sessile; flowers in a close terminal corymb; calyx lobes lanceolate, one third as long as the corolla. — Pine barren ponds, Florida to South Carolina. July – August. — Stem 1° – 2° high. Leaves 1′ – 1½′ long. Corolla "azure, with yellowish veins and 5 white spots near the base."

2. **H. quadrivalvis,** Walt. Spiny; stem ascending from a creeping base, hispid, mostly simple; leaves lanceolate, tapering into a petiole; flowers axillary, the lower ones clustered, short-peduncled; calyx lobes linear, nearly as long as the corolla; stamens included; capsule almost 4-celled by the introversion of the placentæ. — Pools and muddy banks. July – August. — Stem 1° – 3° long. Leaves 3′ – 4′ long.

3. **H. affinis,** Gray. Stem glabrous; lobes of the calyx ovate. Otherwise like the last, and growing in similar situations. — Mississippi, and westward.

4. **H. ovata,** Nutt. Spiny, closely pubescent; stem branching near the summit; leaves short (1′–1½′ long), ovate; flowers crowded at the end of the branches; calyx lobes lanceolate, villous, shorter than the corolla; stamens exserted. — Central Georgia, and westward. — Stem 1°–2° high. Corolla 1′ wide.

5. NAMA, L.

Calyx 5-parted. Corolla tubular-funnel-shaped, 5-cleft. Stamens included, the filaments equal: anthers reniform. Ovules numerous, pendulous. Styles 2, distinct. Capsule oblong, many-seeded, seemingly 2-celled by the meeting of the placentæ at the axis, 2- or at length 4-valved. Seeds pitted. — Diffuse hairy herbs, with alternate entire leaves, and axillary and terminal single, clustered, or cymose purple or white flowers.

1. **N. Jamaicensis,** L. Pubescent; stems prostrate, diffusely branched, angled or slightly winged; leaves spatulate-obovate, tapering into a petiole; flowers solitary or 2–3 together, short peduncled; calyx lobes linear, ciliate, as long as the corolla; capsule oblong. — South Florida. — Stem 12′–18′ long. Leaves ½′–1′ long. Corolla small, purple.

ORDER 99. BORRAGINACEÆ. (BORAGE FAMILY.)

Herbs or shrubs, with terete or irregularly angled stems, and alternate entire exstipulate mostly rough-hairy leaves. Flowers usually in 1-sided spikes or racemes, which are coiled in the bud. — Calyx free, 5-cleft or 5-parted, valvate in the bud, persistent. Corolla regular (except No. 6), hypogynous, 5-lobed, imbricated or (in Myosotis) convolute in the bud. Stamens 5, equal, inserted on the tube of the corolla and alternate with its lobes. Ovary 4-celled, with a single ovule in each cell. Style single. Fruit various. Albumen scarce or none. Cotyledons flat or folded. Radicle superior.

Synopsis.

TRIBE I. **CORDIEÆ.** Ovary undivided. Style terminal, twice 2-lobed at the apex. Fruit a 4-celled drupe. Cotyledons folded. Albumen none. — Shrubs. Flowers in heads or cymes.

1. CORDIA. Calyx opening regularly, not circumscissile.

TRIBE II. **EHRETIEÆ.** Ovary undivided. Style terminal, 2-lobed at the apex. Fruit a 4-seeded berry. Cotyledons flat. Albumen scanty. — Shrubs.

2. BOURRERIA. Style slender. Flowers corymbose.
3. TOURNEFORTIA. Style short. Flowers cymose or spiked.

TRIBE III **HELIOTROPEÆ.** Ovary undivided. Style terminal, simple. Fruit separating into 2 or 4 nutlets. — Chiefly herbs.

4. HELIOTROPIUM. Fruit separating into four 1-seeded, or into two 2-seeded nutlets.

TRIBE. IV. **BORRAGEÆ.** Ovary deeply 4-parted, enclosing the base of the simple style. Fruit of 1 – 4 one-seeded nutlets. — Herbs.

* Throat of the corolla naked. Nutlets not hispid.

+ Corolla irregular.

5. ECHIUM. Corolla funnel-shaped, unequally lobed.

+ + Corolla regular.

6. ONOSMODIUM. Lobes of the corolla erect, acute. Nutlets smooth and stony.

7. LITHOSPERMUM. Lobes of the corolla rounded. Nutlets smooth or rugose.

8. MERTENSIA. Lobes of the corolla rounded. Nutlets somewhat fleshy.

9. MYOSOTIS. Lobes of the corolla convolute in the bud. Nutlets smooth.

* * Throat of the corolla closed with scales. Nutlets hispid.

10. CYNOGLOSSUM. Corolla funnel-shaped. Nutlets depressed, spreading.

11. ECHINOSPERMUM. Nutlets erect, hispid on the back or margins.

1. CORDIA, Plum.

Calyx ovate or bell-shaped, 4 – 5-toothed, not circumscissile. Corolla funnel- or salver-form, 4 – 5-lobed. Stamens 4 – 5. Ovary entire, 4-celled. Style terminal, twice 2-cleft, mostly exserted. Drupe ovate or globose, pulpy, 1 – 4-seeded, commonly enclosed in the enlarged calyx. — Trees or shrubs. Leaves toothed or entire. Flowers cymose or capitate.

1. **C. bullata,** L. Rough throughout with white bristly hairs; leaves oblong-ovate, serrate-toothed, rugose, abruptly petioled; flowers capitate, on peduncles which are shorter than the leaves, and nearly terminal, but elongated and lateral in fruit; calyx ovoid, the subulate bristly teeth spreading; corolla short, hairy in the throat; stigmas club-shaped; drupe 1-seeded. — South Florida. — Leaves ½′ – 1½ long. Heads 4″ – 5″ in diameter.

2. **C. Sebestena,** L. (GEIGER TREE.) Rough-pubescent; leaves large (4′ – 8′ long), ovate; cyme loose, many-flowered; calyx cylindrical, 2 – 5-toothed, half as long as the tube of the large red corolla; stamens 5 – 8. — Keys of South Florida. — A large shrub.

2. BOURRERIA, P. Browne.

Calyx ovoid or globular, 2 – 5-toothed. Corolla bell-shaped, 4 – 5-lobed. Fruit drupaceous, composed of four more or less separable 1-seeded nutlets. — Tropical shrubs, with entire leaves, and corymbose white flowers.

1. **B. Havanensis,** Miers. Smooth; leaves obovate or oblong-obovate; corymb many-flowered, divaricate; calyx leathery, the teeth acute, pubescent on the margins; stigmas depressed; nutlets 4, 1-seeded, finely furrowed on the back. — South Florida. — A small tree. Leaves 1½′ – 3′ long. Flowers fragrant.

2. **B. Radula,** Don. Stem smooth; leaves obovate, very rough, and at length tubercular-hispid above; corymb few-flowered; calyx 4 – 5-toothed; lobes of the corolla rounded, wavy; drupe ovate, separable into four 1-seeded nutlets. — South Florida. — Leaves 1′ – 1½′ long. Corolla 6″ long.

3. TOURNEFORTIA, L.

Calyx 5-parted. Corolla salver-form or wheel-shaped, 5-lobed. Stamens 5, included. Style short, terminal; stigma conical. Drupe composed of two 2-seeded nutlets, which are either united or separable, or by abortion 1 - 2-seeded. — Erect or twining shrubs, with entire leaves, and white or yellowish flowers, in 1-sided bractless often cymose spikes.

* *Fruit ovate, separable into two 2-seeded nutlets: corolla lobes ovate, plicate.*

1. **T. gnaphalodes,** R. Br. White-silky throughout; stem thick, erect; leaves very numerous and imbricated, linear, obtuse, fleshy, tapering to the base; peduncles axillary; spikes 2 - 4-parted, dense, recurved; calyx lobes oblong, obtuse; corolla fleshy; anthers ovate; drupe deeply excavated at the base. — Sea-shore, South Florida. — Shrub 2° - 4° high. Leaves 3′ long. Corolla small, white.

* * *Fruit globose, more or less lobed, composed of 1 - 4 nutlets, each 1-seeded: corolla lobes narrow, acute.*

2. **T. volubilis,** L. Stem twining, and, like the lower surface of the leaves and spikes, tomentose; leaves ovate or oblong-ovate, petioled, roughish above, paler beneath; spikes lateral and terminal, very slender, cymose, short-peduncled, spreading; tube of the corolla contracted in the middle, the lobes linear-subulate; anthers connivent; drupe small, 1 - 3-seeded. — South Florida. — Leaves 1′ - 1½′ long. Corolla 2″ long.

4. HELIOTROPIUM, Tourn.

Calyx 5-parted, persistent. Corolla salver-form, folded between the 5 lobes. Filaments and style very short. Stigma somewhat conical. Fruit separable into four 1-seeded, or into two 2-seeded nutlets. — Herbs or shrubby plants. Leaves rarely opposite. Spikes 1-sided. Flowers white or blue.

* *Throat of the corolla open. Nutlets 4, each 1-seeded.*

1. **H. polyphyllum,** Lehm. Rough, with short appressed white hairs; stems (1° long) spreading from a woody root, very leafy; leaves nearly sessile, lanceolate; spikes leafy; nutlets 4, hairy; corolla white, or, in var. Leavenworthii, *Gray*, bright yellow. — South Florida, the variety near Miami (*Garber*).

2. **H. tenellum,** Torr. Annual, rough hairy; stem erect (6′ - 12′ high), slender, branching; leaves linear; racemes leafy or naked, remotely few-flowered, calyx lobes linear, unequal; corolla white — Alabama, West Tennessee, and westward.

3. **H. Curassavicum,** L. Annual, smooth, fleshy; stems at length prostrate and diffuse; leaves alternate or opposite, lanceolate or linear, obtuse, narrowed at the base; spikes peduncled, simple or 2-parted, coiled in the bud; flowers small, sessile, white, bractless; nutlets smooth. — Saline marshes, Florida to North Carolina. June - August. — Stem 6′ - 18′ long. Leaves 1′ - 2′ long. — Plant dries black.

4. **H. phyllostachyum,** Torr. Annual; stem erect, branched, rough with rigid white appressed hairs; leaves oblong or lanceolate, obtuse, hispid,

the lower opposite; spikes filiform, 1-sided, flowers short-pedicelled, some of them leafy-bracted, others bractless; corolla (½″ long), white; nutlets united, hispid at the apex, with the sides concave. — South Florida. — Stem 4′–6′ high. Leaves ½′ long. Corolla slightly hispid.

5. **H. Europæum,** L. Pubescent; leaves oblong-oval, obtuse, long-petioled; spikes bractless, lateral and terminal, single or in pairs; flowers white. — Waste ground. Introduced.

* * *Throat of the corolla closed or bearded. Nutlets 2, each 2-seeded.*

6. **H. Indicum,** L. Annual; stem erect, rough-hairy; leaves oblong-ovate, often cordate, toothed or wavy on the margins, rugose, decurrent into a long petiole; spikes hairy, coiled, at length elongated; corolla blue; nutlets spreading. — Waste places. June–Oct. — Stem 1°–2° high. Leaves 2′–4′ long. Fruiting spike 6′–9′ long.

7. **H. parviflorum,** L. Perennial, hirsute; stem erect, branching; leaves lanceolate or oblong, obtuse, entire, tapering into a slender petiole, the lower ones mostly opposite; spikes slender; corolla white, bearded in the throat; nutlets uneven, united. — South Florida. — Stem 6′–18′ high. Leaves 1′–2′ long. Corolla 1″ long. Spikes 2′–4′ long.

8. **H. anchusæfolium,** Poir. Stem villous, simple; leaves lanceolate; cyme compact, at length spreading; flowers violet-blue. — Waste ground. Introduced.

5. ECHIUM, Tourn.

Calyx 5-parted. Corolla funnel-form, unequally 5-lobed, naked at the throat. Stamens 5, unequal, mostly exserted. Style filiform. Nutlets 4, closed at the base, uneven or rough. — Herbs, with alternate leaves, and blue or purple flowers in spiked often panicled racemes.

1. **E. vulgare,** L. Hispid; stem simple, erect (1°–2° high); leaves linear-lanceolate, sessile; flowers large, in short axillary racemose spikes; corolla purple, pubescent, twice as long as the lanceolate calyx teeth, shorter than the stamens and style. — Fields, North Carolina. Introduced. June–Aug. ②.

6. ONOSMODIUM, Michx.

Calyx 5-parted, the lobes linear and acute. Corolla ovate-tubular, naked in the throat, with five acute, connivent lobes. Anthers nearly sessile, sagittate, included. Ovary 4-parted. Style smooth, exserted. Nutlets 1–4, ovoid, shining. — Erect hispid herbs, with entire somewhat ribbed sessile leaves, and greenish flowers in a terminal bracted raceme or spike.

1. **O. Carolinianum,** DC. Rough with spreading white rigid hairs; stem stout, branched; leaves oblong-ovate; lobes of the corolla ovate, hairy; calyx lobes scarcely twice as long as the dull white nutlets. — Dry soil in the upper districts. June. ♃ — Stem 3°–4° high. Leaves 2′–3′ long.

2. **O. Virginianum,** DC. Rough with appressed bristly hairs; stem slender, sparingly branched; leaves lanceolate or oblong-lanceolate; lobes of the corolla lanceolate-subulate, bristly; calyx lobes 3–4 times as long as the white polished nutlets. — Dry pine barrens. May–June. ♃ — Stem 1°–2° high. Leaves 2′ long. Corolla twice as long as the calyx.

7. LITHOSPERMUM, L. GROMWELL.

Calyx 5-parted, the lobes equal. Corolla funnel- or salver-form, obtusely 5-lobed, smooth, gibbous or hairy in the throat. Anthers oblong, nearly sessile, included. Stigma capitate, somewhat 2-lobed. Nutlets 1 – 4, ovate, stony, truncate at the base. — Chiefly rough-hairy herbs, with red roots, alternate entire leaves, and variously colored flowers in leafy-bracted racemes or spikes.

* *Annual: nutlets roughened.*

1. **L. arvense,** L. Rough with appressed hairs; stem branching from the base; leaves lanceolate; flowers scattered; corolla yellowish white, about as long as the linear-subulate lobes of the calyx; nutlets 4. — Waste places. March – April. Introduced. — Stem 6′ – 18′ high. Leaves 1′ – 2′ long.

* * *Perennials: nutlets smooth, white.*

2. **L. tuberosum,** Rugel. Hispid with scattered rigid hairs; stem erect, branching above; leaves somewhat 3-nerved; radical ones large (4′ – 6′ long), obovate-oblong, narrowed into a petiole tubercular-hispid above; the others oblong, sessile; calyx lobes linear, as long as the tube of the small yellowish white corolla, and twice as long as the mostly solitary polished nutlet. — Rocky woods, West Florida. April – May. — Plant 6′ – 10′ high, increasing in fruit to 2° or more. Roots bearing oblong tubers.

3. **L. latifolium,** Michx. Softly pubescent; leaves broadly lanceolate, acute or acuminate; root fibrous; otherwise like the preceding. — Tennessee, and northward. — Stem 1° – 2° high.

4. **L. hirtum,** Lehm. Hispid with rigid glossy hairs; stem mostly simple, erect; leaves linear-lanceolate, obtuse, sessile; the lowest scale-like; the floral ones ovate-lanceolate; corolla large, yellow; the tube rather longer than the linear calyx lobes; nutlets ovate, polished. — Dry pine barrens. April – May. — Stem 1° – 1½° high. Leaves 1′ – 2′ long. Corolla 6″ – 8″ long. Root very long.

5. **L. canescens,** Lehm. Stem villous, erect, nearly simple; leaves lanceolate, sessile, obtuse, somewhat silky with appressed glossy hairs; the lowest small and scale-like; corolla large, yellow; the tube 2 – 3 times as long as the calyx. — Dry soil in the upper districts. April – May. — Stem 6′ – 12′ high. Corolla smaller than in the preceding.

6. **L. angustifolium,** Michx. Strigose; stems 6′ – 12′ high, single or clustered; leaves 1′ – 2′ long, linear; flowers dimorphous, one form with bright yellow corollas, 1′ long, salver-form, with round denticulate lobes, and a 5-toothed crest at the throat, 2 – 3 times longer than the calyx, the other small and pale, enclosed in the calyx, and crestless; seed pitted. — Tennessee, and westward. June.

8. MERTENSIA, Roth. LUNGWORT.

Calyx 5-parted. Corolla funnel-shaped, 5-lobed, naked, or with 5 folds in the throat. Stamens partly exserted. Style filiform. Nutlets somewhat fleshy, not flattened at the base. — Smooth or soft hairy perennial herbs, with entire leaves, and showy purplish blue flowers in corymbed or panicled racemes, the upper ones bractless.

1. **M. Virginica,** DC. Smooth; stem erect, simple; leaves membranaceous, elliptical or obovate-oblong, the lower ones narrowed into a petiole; racemes corymbose; corolla large, naked and expanding at the throat, slightly lobed; filaments longer than the anthers. — River banks and along streams in the upper districts. May. — Stem 1° - 2° high. Leaves 2′ - 3′, or the lowest 4′ - 6′ long. Corolla 1′ long.

9. MYOSOTIS, L. Forget-me-not.

Calyx 5-cleft. Corolla salver-form, 5-lobed, convolute in the bud; the tube as long as the calyx, with 5 obtuse appendages in the throat. Stamens very short, included. Nutlets 4, elliptical, compressed, smooth, with a minute scar at the base. — Low hairy herbs, with entire alternate leaves, and small white or blue flowers in terminal bractless racemes.

1. **M. palustris,** With. Smooth, or slightly roughened with appressed scattered hairs; stem weak, slender, creeping at the base, branching; leaves lanceolate, obtuse, the lowest spatulate; racemes elongated in fruit; flowers distant, on widely spreading pedicels; calyx hispid, the teeth equal and obtuse; corolla pale blue. — Low grounds. Introduced. May. M — Stem 1° high. Leaves 1′ - 1½′ long.

2. **M. verna,** Nutt. Hirsute; stem erect (4′ - 8′ high), branching above; leaves lanceolate, sessile; the lower ones spatulate, obtuse; calyx longer than the appressed pedicel, hispid, with the hairs near the base hooked; the teeth unequal, acute. — Var. MACROSPERMA is every way larger (1° - 1½° high); calyx with all the hairs hooked, the lower teeth twice as long as the upper ones. — Dry places in the upper districts; the variety, Florida, and westward. March - April. ① — Corolla white or pale blue.

10. CYNOGLOSSUM, Tourn. Hound's-tongue.

Calyx 5-parted. Corolla funnel-form, with the throat closed with 5 obtuse scales. Stamens included. Nutlets 4, spreading, fixed near the apex to the base of the central column, covered all over with barbed or hooked bristles. — Racemes with the lower flowers commonly bracted, the upper bractless.

1. **C. officinale,** L. Villous; stem leafy, branched above; leaves lanceolate or oblong, acute; the upper sessile, the lowest tapering into a long petiole; racemes hoary, nearly bractless; nutlets flattened anteriorly and slightly margined; corolla reddish violet. — Waste grounds. Introduced. — Stem 1½° - 2° high.

2. **C. Virginicum,** L. Hispid; stem simple, stout, naked above; leaves oval or oblong; the lowest petioled, the upper auriculate and clasping; racemes single or corymbose, bractless; pedicels slender, recurved in fruit; nutlets rounded anteriorly; corolla pale blue. — Dry soil, chiefly in the upper districts. May - June. — Stem 2° - 3° high. Lowest leaves 6′ - 9′ long. Nutlets 1 - 4.

11. ECHINOSPERMUM, Swartz. STICKSEED.

Calyx, corolla, etc. of the preceding. Nutlets fixed to the side of the central column, the back or margins only armed with barbed bristles.

1. **E. Virginicum,** Lehm. Hairy; stem erect, rather slender, widely branched; leaves lanceolate-oblong, acute; the lowest tapering into a petiole; racemes numerous, slender, villous, bracted; pedicels short, recurved in fruit; corolla small, about as long as the calyx, white or pale blue. — Dry woods in the upper districts. June – July. — Stem 2° – 3° high.

2. **E. Lappula,** L. Stem erect, branched above, 1° – 2° high, hirsute; leaves lanceolate; racemes bracted; pedicels of the (blue) flowers erect; margins of the nutlets bristly. — Waste ground, Tennessee. Introduced.

ORDER 100. ACANTHACEÆ. (ACANTHUS FAMILY.)

Chiefly herbs, with opposite (rarely alternate or clustered) undivided exstipulate leaves, and bracted, often showy flowers. — Calyx 5-parted. Corolla more or less bilabiate, 5-lobed, twisted in the bud. Fertile stamens 2 or 4, inserted on the tube of the corolla: anthers 2-celled. Ovary free. Style single: stigma entire or 2-lobed. Capsule loculicidally 2-valved, 2-celled, 4 – several-seeded, opening elastically. Seeds anatropous, flat, rounded, without albumen (except Elytraria), mostly supported by curved appendages of the placentæ. Radicle inferior. — Stems commonly swollen between the joints.

Synopsis.

* Capsule oblong, bearing the seeds at the base. Appendages of the placentæ none.

1. ELYTRARIA. Spike borne on a closely-bracted scape. Leaves radical.
2. HYGROPHILA. Stem leafy. Flowers axillary. Corolla 2-lipped.

* * Capsule club-shaped. Seeds supported by an appendage.

+- Corolla convolute in the bud.

3. RUELLIA. Corolla regular. Anther cells pointless. Capsule several-seeded.
4. CALOPHANES. Corolla slightly 2-lipped. Anther cells pointed at the base. Capsule 2 – 4-seeded.

+- +- Corolla imbricate in the bud.

++ Stamens 4.

5 STENANDRIUM. Corolla regular. Anthers 1-celled. Stem scape-like.

++ ++ Stamens 2.

6. GATESIA. Corolla regular. Anther cells oblong, one lower than the other.
7. DIANTHERA. Corolla bilabiate. Stamens 2. Cells of the anthers placed one lower than the other. Flowers in long-peduncled axillary spikes.
8. DICLIPTERA. Corolla bilabiate, resupinate. Stamens 2. Cells of the anthers placed one behind the other. Flowers in leafy-bracted heads or clusters.

1. ELYTRARIA, Vahl.

Calyx 4 – 5-parted, the lateral lobes narrower. Corolla salver-shaped or bilabiate, 5-lobed. Fertile stamens 2, the 2 anterior sterile: anther cells parallel. Stigma 2-cleft. Capsule sessile, about 8-seeded; the seeds fixed near the base of the capsule, without appendages. — Low herbs. Leaves all radical, clustered Scape covered with alternate imbricated bracts. Flowers spiked, 2-bracted.

1. **E. virgata**, Michx. Leaves oval or oblong, narrowed downward; bracts rigid, lanceolate, acuminate, clasping; corolla white, salver-shaped, the lobes nearly equal; capsule cylindrical. — Low ground, Florida to South Carolina. August. ♃ — Scapes 6′-12′ high. Leaves 2′-4′ long. Spikes rarely clustered.

2. HYGROPHILA, R. Br.

Calyx equally 4-cleft. Corolla 2-lipped, the lower lip 3-lobed. Stamens 4, didynamous: anther cells parallel, spreading at the base. Stigma simple. Capsule narrow, nearly terete, bearing the numerous orbicular seeds at its base. — Aquatic herbs. Flowers axillary, in cymose clusters.

1. **H. lacustris**, Nees. Stem long (2°-4°), erect from a procumbent base, 4-angled; leaves sessile, lanceolate; cymes opposite, few-flowered; calyx smooth; flowers white. — Muddy banks of rivers, Florida, and westward.

3. RUELLIA, Plum.

Calyx 2-bracted, 5-parted, with linear or bristle-like lobes. Corolla funnel-shaped, 5-lobed; the lobes equal, rounded. Stamens 4, didynamous, included: anthers sagittate. Style simple, or 2-cleft at the apex. Capsule narrowed below the middle, flattened contrary to the partition, 8-12-seeded. Seeds borne above the middle, supported by curved appendages of the placentæ. — Perennial herbs, with tumid joints, entire opposite leaves, and axillary solitary or clustered nearly sessile flowers. Corolla white, blue, or purple, nocturnal.

1. **R. ciliosa**, Pursh. Stem simple or branched, pubescent, 1°-2° high; leaves sessile or short-petioled, ovate, oblong, or wedge-shaped, denticulate or entire, 1′-5′ long, long-ciliate; flowers single or clustered; calyx lobes filiform or setaceous, ciliate, mostly shorter than the tube of the corolla. — Dry soil. March-Sept. — Corolla blue, 1′-2′ long. — Very variable; the extremes are a low (1′-12′ high) villous form of the lower districts, with obovate or wedge-shaped obtuse sessile leaves, and a taller and smoother mountain form, with larger (3′-5′ long) ovate-oblong short-petioled leaves, resembling the next.

2. **R. strepens**, L. Stem smooth or puberulent, 1°-3° high, leaves oblong or ovate-oblong, short-petioled, 3′-6′ long; earliest flowers single, with a large (2′ long) blue corolla, the later cleistogamous, clustered; calyx lobes linear-lanceolate, mostly shorter than the tube of the corolla. — Dry soil chiefly in the upper districts. May-Sept.

3. **R. noctiflora**, Gray. Closely pubescent; stem simple, rigid; leaves oblong or lanceolate, sessile, entire or slightly toothed; flowers solitary, peduncled; corolla large; the elongated tube twice as long as the linear hairy calyx lobes; capsule pubescent. — Low grassy pine barrens, Florida, Georgia, and westward. July-August. — Stem 1° high. Corolla 2′-4′ long, white.

4. CALOPHANES, (Don.)

Calyx lobes setaceous. Corolla funnel-shaped, regular, or 2-lipped. Anther cells mucronate at the base. Capsule 2–4-seeded. Otherwise like the preceding. — Perennial erect herbs from a creeping base.

1. **C. oblongifolia,** Don. Pubescent and somewhat hoary; stem 4-angled, simple or sparingly branched; leaves nearly sessile, oval or obovate, obtuse, the upper narrower and often acute; flowers solitary or 2–3 in a cluster; calyx lobes subulate-setaceous, as long as the oblong bracts and tube of the spotted purple corolla. — Dry sandy pine barrens. June – August. — Stem 6′–12′ high. Leaves ½′–1′ long. Corolla 1′ long.

Var. **angusta,** Gray. Smaller (6′ high), rough-pubescent, diffuse, very leafy; leaves oblong-linear, 4″–6″ long; flowers smaller. — South Florida.

2. **C. humistrata,** Nees. Stem minutely pubescent, simple; leaves smooth, membranaceous, oblong, obtuse, slightly crenate, tapering into a slender petiole; flowers clustered, sessile; calyx lobes subulate-setaceous, shorter than the spatulate-oblong bracts; corolla white. — Shady banks, Georgia and Florida. June – July. — Stems ½°–1½° high. Leaves ½′–1½′ long. Corolla ½′ long.

5. STENANDRIUM, Nees.

Calyx 5-parted. Corolla salver-form, equally 5-lobed. Stamens 4: anthers 1-celled. Stigma truncate. Cells of the ovary 2-ovuled. — Low perennial herbs, with a scape-like stem, clustered radical leaves, and purplish flowers in a terminal spike.

1. **S. dulce,** Nees. Smooth or hirsute; leaves oval or oblong, long-petioled; spike capitate, few-flowered, the bracts ciliate; tube of the corolla longer than the calyx; capsule club-shaped. — South Florida. — Scape 6′ high. Leaves 1′–3′ long. Corolla ½′ wide.

6. GATESIA, Gray.

Calyx 5-parted, the lobes subulate. Corolla salver-shaped, 5-lobed. Stamens 2. Anther cells alike, one lower and oblique. Stigma capitate. Capsule 2–4-seeded.

1. **G. lætevirens,** Gray. Stem tomentose, mostly simple; leaves ovate-lanceolate, acuminate, tapering into a petiole; the lower smaller and obtuse; spikes axillary and terminal, short-peduncled, leafy at the base, compact, few-flowered; bracts oblong, ciliate; capsule oval, 4-seeded. — Shady banks, Georgia, Florida, and westward. June – Sept. — Stem ½°–2° high. Leaves 2′–4′ long. Corolla 4″–5″ long, white.

7. DIANTHERA, Gronov.

Calyx 5-parted. Corolla bilabiate; the upper lip emarginate; the lower 3-lobed, rugose or veiny in the middle, spreading. Stamens 2: anther cells separated, one lower than the other. Stigma simple, acute. Capsule flattened, narrowed downward, bearing the seeds above the middle. Seeds mostly 4, supported by the appendages of the placentæ. — Perennial smooth herbs, with opposite entire leaves, and short-bracted mostly alternate flowers in long-peduncled axillary spikes.

1. **D. Americana,** L. Stem tall, angled; leaves long, linear-lanceolate; spikes oblong, dense or somewhat capitate, on peduncles as long as the leaves. — In slow-flowing streams. July – August. — Stem 2° high. Leaves and peduncles 4′ – 6′ long. Spike ½′ long. Flowers pale purple.

2. **D. ovata,** Walt. Stem low (4′ – 8′ high), 4-angled; leaves ovate-lanceolate, rather acute, narrowed into a short petiole; the lowest small, lanceolate; spikes 3 – 4-flowered, on simple peduncles shorter than the leaves; corolla small, pale purple, the lower lip striped with deeper lines. (Justicia humilis, *Michx.*) — Muddy banks of streams, Florida to South Carolina. — Leaves 2′ – 4′ long, 1′ – 1½′ wide.

Var. **lanceolata,** Chapm. Stem taller (1° – 1½°); leaves smaller, lanceolate, acuminate, nearly sessile; peduncles longer than the leaves; spikes many-flowered, 1-sided, often branching. — River banks, Florida. July.

Var. ? **angusta,** Chapm. Leaves linear or linear-lanceolate, reflexed, the lower ones very remote; peduncles as long as the leaves; spikes several-flowered, the lower flowers often opposite. — Pine barren ponds, Florida. May. — Stem 1° high. Leaves 1′ – 2′ long. Corolla 4″ – 5″ long.

3. **D. crassifolia,** Chapm. Stem rigid, angled; leaves fleshy, linear, channelled; the lower distant, small and obtuse; peduncles stout, erect, longer than the leaves, exceeding the stem; spike few-flowered; corolla large, bright purple; the lower lip striped with deeper lines; capsule 2-seeded; seeds circular, smooth. — Wet pine barrens, Florida. April – May. — Stem 6′ – 12′ high. Leaves 4′ – 6′ long. Peduncles 4′ – 9′ long. Corolla and capsule 1′ long.

8. DICLIPTERA, Juss.

Calyx 5-parted, mostly leafy-bracted. Corolla bilabiate, mostly reversed; the lower lip 3-lobed; the upper 2-cleft or entire. Stamens 2: anther cells equal, one placed behind the other. Capsule oblong or oval, bearing 2 or 4 seeds below the middle; the partitions at length free from the valves. — Herbs, with branching stem, and purple, scarlet, or white flowers in axillary and terminal heads or spike-like cymes.

1. **D. brachiata,** Spreng. Smooth or nearly so; stem 6-angled; leaves thin, oblong-ovate, acuminate, abruptly contracted into a long and slender petiole; spikes solitary or 2 – 3 together, interrupted, unequal; bracts oblong, mucronate, narrowed at the base, at length inflated; corolla small, purple. — — River banks, Florida to North Carolina. July – August. — Stem 1° – 2° high.

2. **D. assurgens,** Juss. Smooth or minutely pubescent; stem angled; leaves elliptical, acute, on slender petioles; flowers mostly single, scattered in 1-sided spike-like cymes; bracts small; calyx lobes subulate, unequal; corolla (scarlet) curved, nearly equally 2-lipped; anthers slightly exserted; style elongated. — South Florida. — Stem 1° – 2° high. Leaves 1′ – 2′ long. Corolla 9″ – 12″ long.

ORDER 101. VERBENACEÆ. (VERVAIN FAMILY.)

Chiefly herbs or shrubs, with 4-angled mostly rough stems, and opposite and exstipulate leaves. Flowers spiked, capitate, or cymose.—Calyx 4–5-cleft or parted, free. Corolla regular and salver-shaped, or more or less bilabiate, 4–5-lobed. Stamens 4–5, inserted on the tube of the corolla: anthers 2-celled. Ovary entire, 1–8-celled, with 1 or (in Avicennia) 2 ovules in each cell. Style simple, terminal. Fruit dry or baccate, 1–8-celled, commonly separable into as many 1-seeded indehiscent nutlets. Albumen scarce or none. Embryo straight.

Synopsis.

TRIBE I. **VERBENEÆ.** Ovule solitary, erect from the base of the cell, anatropous. Radicle pointing downward. Flowers in spikes or heads.

* Herbs. Fruit dry.

1. PRIVA. Stamens 4. Fruit of two nutlets, enclosed in the inflated calyx.
2. VERBENA. Stamens 4. Fruit of four nutlets. Fruiting calyx not inflated.
3. STACHYTARPHA. Stamens 2. Fruit of two nutlets, embedded in excavations of the thickened rachis.
4. LIPPIA. Stamens 4. Fruit of two nutlets. Flowers capitate.

* * Shrubs. Fruit fleshy or pulpy.

5. LANTANA. Fruit of two nutlets. Flowers capitate.
6. CITHAREXYLUM. Fruit of two nutlets surrounded by the cup-shaped calyx. Flowers spiked.
7. DURANTA. Fruit of four nutlets enclosed in the beaked calyx.

TRIBE II. **VITEÆ.** Ovule solitary, suspended from the inner angle of the cell, amphitropous. Radical pointing downward. Flowers in cymes. Fruit baccate.

8. CALLICARPA. Fruit of four nutlets. Shrubs.

TRIBE III. **AVICENNIÆ.** Ovules by pairs, suspended from the apex of the cell, amphitropous. Radicle pointing downward. Flowers in imbricated spikes or heads. Fruit capsular.

9. AVICENNIA. Embryo large, germinating within the capsule. Trees.

TRIBE IV. **PHRYMEÆ.** Ovule solitary, erect from the base of the 1-celled ovary, orthotropous. Radicle pointing upward. Cotyledons convolute around their axis. Flowers in elongated slender spikes. Fruit a caryopsis.

10. PHRYMA. Corolla bilabiate. Stamens 4, didynamous. Fruit reflexed.

1. PRIVA, Adans.

Calyx tubular, 5-toothed. Corolla salver-shaped, 5-cleft. Stamens 4, didynamous, included. Ovary 4-celled. Style persistent. Fruit dry, separating into two 2-celled spiny-angled nutlets, and included in the inflated membranaceous calyx.—Perennial herbs, with serrate petioled undivided leaves, and minute flowers in a loose slender spike.

1. **P. echinata,** Juss. Smooth or hispid; stem branching; leaves cordate-ovate, acute, coarsely serrate; flowers alternate; fruiting calyx bristly

with hooked hairs, ovoid; fruit ovate, 4-angled, the angles armed with tubercular spines, pointed by the persistent bent style. — South Florida. — Leaves 1′-2′ long. Spikes 6′-9′ long, terminal and in the forks of the stem.

2. VERBENA, L. VERVAIN.

Calyx tubular, 5-ribbed, 5-toothed. Corolla salver-shaped, bearded in the throat; the limb somewhat bilabiate, 5-lobed. Stamens 4, didynamous, included. Stigma 2-lobed. Ovary 4-celled. Fruit of four separate 1-seeded nutlets. — Herbs, with serrate or pinnately divided leaves, and mostly small flowers in lengthening slender spikes.

* *Anthers of the longer stamens tipped with a gland-like appendage: flowers showy.*

1. **V. Aubletia,** L. Hairy; stem creeping at the base, ascending, forking; leaves ovate-oblong, 3-cleft, with the lobes toothed, narrowed into a slender petiole; spikes terminal and in the forks of the stem, long-peduncled, closely flowered; calyx slender, the unequal teeth subulate; corolla showy, purple. — Dry light soil, Florida to South Carolina, and westward. May-August. — Stem 6′-12′ high. Corolla ½′ long.

* * *Anthers without appendages: flowers small.*

+- *Leaves undivided.*

2. **V. urticifolia,** L. Rough-hairy; stem tall, branching; leaves ovate-oblong, acute or acuminate, mucronate-serrate, contracted at the base into a long petiole; spikes very long, filiform, axillary and terminal; flowers minute, white or pale blue. — Low ground. August-Oct. — Stem 2°-5° high. Leaves very rough, 2′-6′ long.

3. **V. hastata,** L. Rough-hairy; stem branching; leaves oblong-lanceolate, acuminate, coarsely and sharply serrate, tapering into a long petiole; the lowest broader, and sometimes hastate-lobed at the base; spikes linear, short, close-flowered; flowers violet. — Low ground, in the upper districts. July-Sept. — Stem 2°-3° high. Flowers larger than in No. 2.

4. **V. stricta,** Vent. Softly pubescent; stem mostly simple; leaves sessile, oblong, serrate; spikes thick, densely flowered; flowers rather large, blue. — Barrens of Tennessee, and westward. — Stem 1°-2° high.

5. **V. Bonariensis,** L. Pubescent and scabrous; stem much branched (2°-3° high); leaves lanceolate, serrate, auriculate-clasping; panicle dense, cymose, the spikes short; tube of the purple corolla twice as long as the calyx. — Roadsides near Charleston (*Curtiss*). Introduced.

6. **V. angustifolia,** Michx. Rough-hairy; stem simple, or branched above; leaves lanceolate or linear-lanceolate, rather obtuse, coarsely serrate, tapering from near the apex to the sessile base; spikes linear, terminal, close-flowered; flowers purple. — Dry woods. July-Sept. — Stem 6′-12′ high. Flowering spikes 2′-6′ long.

7. **V. Caroliniana,** Michx. Rough with short rigid hairs; stem ascending; leaves oblong, or the lowest oblong-obovate, sharply and doubly serrate, entire toward the narrowed base, sessile; spikes 1-3, elongated;

flowers flesh-color. — Dry pine barrens, Florida to South Carolina, and westward. August — Stem 4′–6′ high, shorter than the spikes. Leaves 1′–2′ long. Nutlets tardily separating.

+ + *Leaves pinnatifid.*

8. **V. officinalis,** L. Stem smoothish, erect, branching; leaves lanceolate or oblong, pinnately lobed or toothed, narrowed and entire near the base, sessile, pubescent beneath; spikes linear or filiform, panicled; bracts shorter than the calyx; flowers purple. — Waste ground, chiefly in the upper districts. Introduced. July – August. — Stem 1°–3° high.

9. **V. bracteosa,** Michx. Hirsute and hoary; stems numerous, prostrate, diffuse; leaves small, pinnately toothed or lobed, oblong, narrowed into a petiole; spikes terminal, dense; bracts linear, entire, spreading, much longer than the flowers, the lower ones recurved; flowers purple. — Waste ground, and along roads. August. — Stems 4′–6′ long. Spikes 3′–6′ long. Leaves 6″–9″ long.

10. **V. xutha,** Lehm. Hirsute; stem 1°–2° high; leaves oblong-ovate, coarsely toothed, or some 3-parted; spikes long, filiform, densely flowered, the subulate bracts little exceeding the calyx; corolla blue. — Roadsides, Georgia, and westward.

3. STACHYTARPHA, Vahl.

Calyx tubular, compressed, 5-toothed. Corolla salver-shaped, 5-cleft, hairy in the throat. Stamens 4, didynamous, the upper pair sterile. Ovary 2-celled. Stigma capitate. Fruit of two 1-celled 1-seeded nutlets. — Herbs or shrubs, with 4-angled forking stems, and opposite undivided leaves. Flowers in straight and rigid spikes, sunk in excavations of the thickened rachis, and covered by the imbricated bracts.

1. **S. Jamaicensis,** Vahl. Herbaceous, smoothish; stems ascending; leaves oblong, coarsely serrate, tapering into a slender margined petiole; spikes linear, terete, elongated; bracts lanceolate, acuminate, appressed, with scarious rough margins; flowers small, blue. — South Florida. — Leaves 2′–4′ long. Spikes 8′–12′ long.

4. LIPPIA, L.

Calyx tubular, membranaceous, 2–4-toothed. Corolla tubular-funnel-shaped, somewhat bilabiate, 5-cleft. Stamens 4, didynamous, included. Ovary 2-celled, 2-ovuled. Style short: stigma obliquely capitate. Fruit of two 1-seeded separable nutlets. — Herbs, with 4-angled stems, opposite or whorled simple leaves, and small flowers in dense spikes or heads.

1. **L. nodiflora,** Michx. Stem creeping, finely pubescent, the flowering branches erect; leaves obovate, oblong, or lanceolate, rough, tapering and entire below the middle, serrate above; heads dense, globose in flower, oblong or cylindrical in fruit, on axillary peduncles which are 2–3 times as long as the leaves; flowers white or purple. — Damp soil, chiefly near the coast. May – Sept. — Flowering stems 6′–12′ high. Leaves 1′–2′ long.

5. LANTANA, L.

Calyx minute, slightly 4-toothed. Corolla bilabiate; the upper lip notched or entire; the lower 3-lobed. Stamens 4, didynamous, included. Style short: stigma oblique. Fruit fleshy or berry-like, of two mostly rugose or tuberculate 1-seeded nutlets, enclosed in the enlarged membranaceous calyx. — Shrubs, with simple rugose serrate leaves, and axillary peduncled capitate bracted flowers.

1. **L. involucrata,** L., var. **Floridana,** Chapm. Stem much branched, pubescent; leaves small (½′ – 1′), oval or obovate, crenate, rounded at the apex, contracted into a slender petiole; peduncles 2 – 3 times as long as the leaves, the upper ones corymbose; heads small; bracts ovate, as long as the tube of the small (2″ – 3″) white corolla; the outer ones involucrate. — South Florida.

2. **L. Camara,** L. Stem pubescent, hirsute, or prickly; leaves ovate-oblong, acuminate, crenate, short-petioled, very rough above, pubescent beneath; peduncles as long as the leaves; bracts lanceolate, half as long as the tube of the yellow corolla; involucre none. — Around homesteads, escaped from cultivation. June – Nov. — Shrub 2° – 4° high. Leaves 2′ long. Fruit juicy.

6. CITHAREXYLUM, L.

Calyx cup-shaped or somewhat tubular, slightly 5-toothed. Corolla salver-shaped, 5-lobed, the throat pubescent. Stamens 4 – 5, included: anthers sagittate. Ovary 4-celled. Style thickened upward: stigma notched. Drupe juicy, of two 2-seeded bony nutlets, partly included in the enlarged indurated calyx. — Trees or shrubs, with entire mostly glandular-petioled leaves, and small flowers in slender spikes or racemes.

1. **C. villosum,** Jacq. Pubescent or glabrous; leaves somewhat coriaceous, oblong, entire, roughened and shining above, short-petioled; spikes declining, lax-flowered; corolla smooth, the lobes rounded or notched; stamens 4; drupe globose, half included in the enlarged calyx. — South Florida. — Leaves 2′ – 5′ long. Spikes 2′ – 4′ long. Corolla 2″ long. Drupe 4″ in diameter.

7. DURANTA, L.

Calyx tubular, 5-ribbed, 5-toothed. Corolla somewhat bilabiate, pubescent in the throat; the upper lip 2-lobed; the lower 3-lobed. Stamens 4, included. Ovary 8-celled. Style short: stigma oblique. Drupe baccate, of four 2-seeded bony nutlets, included in the enlarged beak-pointed calyx. — Shrubs. Leaves opposite or whorled, entire, dotted. Flowers showy, in axillary and terminal racemes.

1. **D. Plumieri,** Jacq. Spineless or spiny; branches and racemes pubescent; leaves oblong or obovate, obtuse, entire, or serrate near the apex, tapering into a slender petiole; racemes curving, lax-flowered; lower bracts leafy; drupe globose. — South Florida. — Leaves 1′ – 2′ long. Corolla 5″ long, lilac. Drupe yellow.

8. CALLICARPA, L. FRENCH MULBERRY.

Calyx small, cup-shaped, 4-toothed. Corolla funnel-shaped, 4-cleft. Stamens 4, equal, exserted. Ovary 4-celled. Style slender; stigma capitate. Drupe baccate, of four separate 1-seeded nutlets. — Shrubs, with a glandular or scurfy mostly stellate pubescence. Leaves opposite, undivided, serrate, petioled. Flowers in axillary forked cymes.

1. **C. Americana,** L. Branches and leaves scurfy; leaves ovate-oblong, acute at each end, crenate-serrate, rough above, hoary beneath, becoming smoothish; cymes many-flowered, as long as the petioles; corolla blue; drupes purple, clustered. — Dry open woods. June – July. — Shrub 3°–8° high. Leaves 4′ – 6′ long.

9. AVICENNIA, L.

Calyx of 5 imbricated concave sepals. Corolla bell-shaped, 5-lobed. Stamens 4, equal, exserted: anthers 2-celled. Ovary 2-celled, with two collateral amphitropous suspended ovules in each cell. Style short or none. Capsule ovate, coriaceous, indehiscent. Embryo large, naked, germinating within the capsule. — Low evergreen trees, with extensively creeping roots, forming impenetrable thickets on the muddy shores of the sea. Leaves opposite, entire, smooth above, hoary and velvety beneath. Flowers in dense heads, on axillary and terminal peduncles.

1. **A. nitida,** Jacq. Tomentose throughout, except the upper surface of the rigid oblong obtuse short-petioled leaves; peduncles three together, terminal, shorter than the leaves; heads oval; sepals and bracts orbicular; corolla tomentose on both sides; style exserted. — Coast of Florida. Oct. — Branches terete. Leaves 2′ – 3′ long. Peduncles 4-angled. Heads ½′ long. Corolla 3″ long.

10. PHRYMA, L. LOPSEED.

Calyx tubular, bilabiate; the upper lip of 3 bristle-pointed teeth; the lower shorter, 2-cleft. Corolla bilabiate; the upper lip notched, the lower longer, 3-lobed. Stamens 4, didynamous, included. Ovary 1-celled, 1-ovuled. Style slender: stigma 2-cleft. Fruit oblong, pointed by the persistent style. — A perennial branching, pubescent herb, with opposite ovate or oblong coarsely serrate long-petioled leaves, and small opposite purplish flowers in a slender terminal spike. Fruit reflexed.

1. **P. leptostachya,** L. Rich shaded soil, chiefly in the upper districts. July – August. — Stem 1° – 3° high, tumid above the joints. Leaves 3′ – 5′ long.

ORDER 102. LABIATÆ. (MINT FAMILY.)

Herbs or shrubs, with opposite 4-angled branches, and opposite exstipulate leaves. Flowers opposite, solitary, or oftener in close axillary spiked or capitate cymes (whorls). Calyx 3 – 10-cleft or toothed. Corolla more or less bilabiate, 4 – 5-lobed. Stamens inserted on the tube of the corolla, diandrous or didynamous. Ovary 4-cleft or 4-parted, the lobes surrounding the base of the single style. Ovule solitary, erect, anatropous. Fruit of 1 – 4 one-seeded nutlets. Albumen scarce or none. Embryo straight or (in Scutellaria) curved. Radicle short, inferior. — Plants commonly dotted with minute glands, which are filled with an aromatic volatile oil.

Synopsis.

TRIBE I. **OCIMOIDEÆ.** Stamens 4, didynamous; the lower pair longer, reclining on the lower lobe of the corolla. Anthers 2-celled. Nutlets smooth, distinct.

1. OCIMUM. Upper lobe of the calyx broad, decurrent. Lobes of the corolla nearly equal.
2. HYPTIS. Calyx teeth nearly equal. Lowest lobe of the corolla longest, saccate, bent downward.

TRIBE II. **SATUREIEÆ.** Stamens 2 or 4, straight and spreading, or connivent under the upper lip; the upper pair shorter, or abortive. Anthers 2-celled. Nutlets smooth, distinct.

* Corolla lobes nearly equal. Stamens distant.

3. MENTHA. Fertile stamens 4. Whorls spiked. Nutlets obtuse.
4. LYCOPUS. Fertile stamens 2. Whorls axillary. Nutlets truncate.

* * Corolla 2-lipped. Stamens straight, distant, spreading.

5. CUNILA. Stamens 2. Calyx equally 5-toothed, hairy in the throat.
6. PYCNANTHEMUM. Stamens 4. Calyx 2-lipped or 5-toothed, naked in the throat.
7. COLLINSONIA. Stamens 2 or 4. Calyx 2-lipped, the upper lip truncate, 3-toothed. Corolla fimbriate.

* * * Corolla 2-lipped. Stamens ascending and spreading above, or connivent under the upper lip.

+ Fertile stamens 2; the two sterile ones small.

8. HEDEOMA. Calyx 13-nerved, 2-lipped; the lower lip hispid.

+ + Fertile stamens 4. Calyx 13-nerved.

9. SATUREIA. Flowers capitate: low shrub.
10. MICROMERIA. Calyx teeth nearly equal. Flowers solitary. Low herbs.
11. CALAMINTHA. Calyx 2-lipped. Flowers in cymes. Anthers awnless. Chiefly shrubs.
12. CONRADINA. Corolla ringent, bent backwards. Flowers mostly axillary and single.
13. CERANTHERA. Calyx 2-lipped. Anther cells awned. Branching annuals.
14. MELISSA. Calyx tubular-bell-shaped, flattened on the upper side. Tube of the corolla curved upward.

TRIBE III. **MONARDEÆ.** Stamens 2, ascending and parallel. Anthers 1-celled, or with 2 confluent cells. Calyx and corolla 2-lipped. Nutlets smooth, distinct.

15. SALVIA. Connective of the anther elongated, oblique; the upper cell fertile; the lower abortive or wanting.
16. MONARDA. Anther 2-celled, the cells confluent. Calyx teeth equal.
17. BLEPHILIA. Anther 2-celled, the cells confluent. Calyx 2-lipped; the upper teeth awned.

TRIBE IV. **NEPETEÆ.** Stamens 4, the upper pair longer. Nutlets smooth, distinct.

18. LOPHANTHUS. Upper stamens curving downward; the lower ascending. Anther cells parallel.
19. NEPETA. Stamens all ascending. Anther cells diverging.
20. CEDRONELLA. Stamens all ascending. Anther cells parallel.

TRIBE V. **STACHYDEÆ.** Stamens 4; the lower pair longer, parallel, ascending. Upper lip of the corolla concave or keeled. Calyx 3-10-toothed or lobed. Nutlets smooth, distinct.

* Calyx 2-lipped, closed in fruit.

21. BRUNELLA. Lips of the calyx toothed. Flowers 3 in a cluster, spiked.
22. SCUTELLARIA. Lips of the calyx entire; the upper one appendaged. Flowers single, opposite.

* * Calyx not 2-lipped; the teeth or lobes spineless.

23. MACBRIDEA. Calyx 3-lobed. Flowers capitate, in crowded 4-flowered whorls.
24. SYNANDRA. Calyx 4-toothed. Sterile anther cells connate.
25. PHYSOSTEGIA. Calyx 5-toothed. Flowers opposite, spiked. Nutlets 3-angled.
26. LAMIUM. Calyx 5-toothed. Flowers in axillary cymes. Nutlets truncated.

* * * Calyx not 2-lipped; the teeth rigid or spiny.

27. MARRUBIUM. Calyx teeth 10, nearly equal. Stamens included. Herbs woolly.
28. LEONOTIS. Calyx teeth 8-10, very unequal. Stamens exserted. Whorls globose.
29. LEONURUS. Calyx teeth 5. Nutlets obtuse, not truncate. Leaves incisely lobed.
30. STACHYS. Calyx teeth 5. Nutlets truncate, sharp-angled. Leaves undivided.

TRIBE VI. **AJUGEÆ.** Stamens 4, ascending, parallel, exserted. Nutlets reticulated and pitted, their bases partially united within.

* Stamens barely exserted, nearly equal.

31. ISANTHUS. Lobes of the corolla and calyx nearly equal. Peduncles 1-3-flowered.

* * Stamens long-exserted, didynamous.

32. TRICHOSTEMA. Lobes of the corolla nearly equal. Calyx 5-cleft. Flowers solitary.
33. TEUCRIUM. Lower lobe of the corolla longest. Calyx 5-toothed. Whorls crowded.

1. OCIMUM, L. BASIL.

Calyx ovate or bell-shaped, 5-toothed, angled, deflexed in fruit; the upper tooth roundish, with the margins decurrent. Corolla nearly equally 2-lipped; the upper lip 4-cleft; the lower entire, flat. Stamens 4, didynamous; the lower pair longer, resting upon the lower lip of the corolla. Style 2-cleft at the apex. Glands of the disk 1-4. Nutlets smooth, ovoid or globular. — Chiefly tropical herbs or shrubs. Whorls 6-flowered, in a terminal bracted spike or raceme.

1. **O. micranthum,** Willd. Stem branched, pubescent; leaves ovate and ovate-lanceolate, finely serrate, slender-petioled; raceme many-flowered, pubescent; bracts ovate, calyx hispid on the nerves, the lower teeth awned; corolla small, slightly exserted; stamens smooth. — South Florida. — Stem 6′-12′ high. Leaves 1′-2′ long. Flowers purple.

2. HYPTIS, Jacq.

Calyx tubular, with 5 equal, subulate teeth. Corolla 5-lobed; the four upper lobes short, spreading or reflexed; the lowest longer, saccate, abruptly deflexed, thickened at the base. Stamens 4, didynamous, included in the bud in the lower lobe of the corolla. Nutlets smooth, ovoid.

1. **H. radiata,** Willd. Perennial; stem mostly simple, pubescent above; leaves ovate-lanceolate, serrate or toothed, tapering into a petiole; flowers capitate, surrounded by an involucre of several lanceolate whitish bracts; corolla small, white, dotted with purple. — Low ground, Florida to North Carolina, and westward. July-Sept. — Stem 2°-4° high.

2. **H. spicata,** Poit. Annual, closely pubescent; stem obtusely 4-angled, muricate; leaves ovate, acute, coarsely serrate, long-petioled; whorls short-peduncled, 3–6-flowered, interruptedly racemose; calyx teeth spine-like, spreading; corolla small, purple. — Tampa and Jacksonville, Florida. Introduced. — Stem 2°–5° high.

3. **H. pectinata,** Poit. Annual? pubescent; stem often muricate; leaves ovate, acute, serrate, twice as long as the petiole, the uppermost ones bract-like: whorls packed in dense one-sided pectinate spikes; calyx villous at the throat; corolla minute, pale purple. — South Florida. — Stems 2°–6° high.

3. MENTHA, L. Mint.

Calyx tubular, nearly equally 5-toothed. Corolla equally 4-lobed, the upper lobe notched or entire. Stamens 4, equal, distant, straight: anther cells parallel. Style 2-cleft at the apex. Nutlets smooth, obtuse. — Aromatic herbs. Whorls axillary, or forming a dense or interrupted terminal spike.

* *Whorls approximate, spicate.*

1. **M. viridis,** L. (Spearmint.) Stem and leaves smooth; leaves ovate-lanceolate, unequally serrate, nearly sessile; bracts leafy, and, like the calyx, smooth or hairy; spike cylindrical, interrupted below; calyx teeth linear-subulate. — Damp soils. Introduced, and sparingly naturalized. July–Sept. — Stem 1°–2° high. Flowers pale blue.

2. **M. rotundifolia,** L. Soft-hairy; stem erect; leaves roundish, rugose, crenate, sessile, hoary beneath; spikes oblong, interrupted; bracts lanceolate; fruiting calyx roundish, the teeth short and acute. — Waste ground. Sparingly introduced. — Stem 1°–2° high. Corolla white.

3. **M. piperita,** L. (Peppermint.) Smooth; stem creeping at the base, ascending, branched; leaves ovate-oblong, acute, sharply serrate, rounded at the base, short-petioled; spikes slender, interrupted; bracts mostly longer than the whorls, the upper ones linear; calyx teeth hairy. — Low ground. Introduced. July–Sept. — Stems 1°–2° high. Flowers white or blue.

* * *Whorls axillary.*

4. **M. Canadensis,** L. Hirsute or glabrous; stem 1° high, branching; leaves oblong or lanceolate, serrate, acute; whorls peduncled, densely many-flowered; calyx teeth short, acute; corolla pale purple. — Low ground, Tennessee, and northward.

5. **M. arvensis,** L. (Corn Mint.) Downy and somewhat canescent; leaves oblong or ovate; whorls dense, globose; calyx teeth lanceolate. — Georgia. Introduced.

6. **M. aquatica,** L., var. **glabrata,** Benth. (Bergamot Mint.) Smooth; leaves ovate, sharply serrate; whorls loose, peduncled, single or racemose; calyx teeth subulate. — Manatee, South Florida (*Garber*). Introduced.

4. LYCOPUS, L.

Calyx bell shaped, equally 4–5-toothed, naked at the throat. Corolla bell-shaped, exserted, equally 4-cleft. Fertile stamens 2, exserted; the upper pair sterile, included or wanting: anther cells parallel. Style 2-cleft at the apex. Nutlets 3-angled, truncate at the apex, narrowed at the base. — Marsh or aquatic mostly stoloniferous herbs. Leaves mostly toothed or pinnatifid. Whorls dense, axillary. Flowers small, sessile, white.

1. **L. Virginicus,** L. Stem smoothish; leaves ovate-lanceolate, toothed-serrate, acute or acuminate at each end; calyx teeth 4, ovate, obtuse; corolla small, exserted; sterile stamens minute. — Ponds and ditches. Sept. — Stem 1° - 2° high. Leaves 1′ - 2′ long.

2. **L. sinuatus,** Ell. Stem 2° - 4° high, smooth, much branched; leaves pinnatifid-toothed, ovate-oblong, tapering at each end; the upper ones narrower; calyx teeth 5, lanceolate-subulate, acute; corolla twice as long as the calyx; sterile stamens minute or none. — Ponds and wet grounds. August - Sept.

3. **L. rubellus,** Mœnch. Closely pubescent or tomentose; stem 1° - 2° high, simple or branched, very leafy; leaves ovate-lanceolate, acuminate at each end, coarsely serrate; whorls dense; calyx teeth subulate, pubescent, nearly as long as the corolla; seeds pitted. — Wet banks, mostly in the upper districts. August - Sept.

4. **L. sessilifolius,** Gray. Pubescent; stem simple or sparingly branched; leaves sessile, lanceolate or linear, toothed, serrate, or entire, resinous-dotted; calyx teeth subulate. — Ponds and ditches in the lower districts. August - Oct. — Stem 2° - 4° high. Leaves 2′ - 4′ long.

5. CUNILA, L. Dittany.

Calyx tubular, 10-nerved, equally 5-toothed, hairy in the throat. Corolla 2-lipped; the upper lip notched or entire, the lower 3-cleft. Stamens 2, distant, exserted: anther cells parallel. Style 2-cleft at the apex. Nutlets smooth. — Perennial herbs. Flowers small, in corymbose or crowded whorls.

1. **C. Mariana,** L. Smooth; stem slender, much branched; leaves ovate, serrate, acute, rounded or cordate at the base, subsessile; cymes loose, axillary and terminal, peduncled, mostly shorter than the leaves, corymbose; calyx teeth lanceolate, acute. — Dry soil along the mountains, Georgia, and northward. July - Sept. — Stem 1° high. Leaves 1′ long. Flowers purple.

6. PYCNANTHEMUM, Michx. Horse-mint.

Calyx tubular, 13 nerved, naked in the throat, equally 5-toothed, or slightly 2-lipped. Corolla 2-lipped; the upper lip notched or entire, the lower 3-cleft. Stamens 4, nearly equal, straight, spreading, commonly exserted: anther cells parallel. Style 2-cleft at the apex. Nutlets smooth. — Perennial mostly pubescent or hoary herbs, with erect branching stems. Floral leaves often white, tomentose. Cymes mostly terminal, bracted. Corolla small, white or purplish. — Plants aromatic and pungent.

* *Calyx more or less 2-lipped, the subulate teeth often bearded with weak jointed hairs: cymes mostly terminal, widely spreading in fruit: bracts longer than the flowers: leaves pubescent, the uppermost whitened.*

1. **P. incanum,** Michx. Stem densely pubescent and hoary; leaves ovate or oblong-ovate, acute, sharply serrate, short-petioled, hoary tomentose

beneath; calyx teeth subulate, and, like the bracts, commonly bearded. — Woods and fence-rows. August – Sept. — Stem 2° – 4° high. Leaves 2′ – 3′ long. Flowers white.

2. **P. albescens,** Gray. Smoother; leaves smaller; calyx teeth shorter and broader, obtuse, beardless; otherwise like the preceding. — With the last. August – Sept.

3. **P. Tullia,** Benth. Villous-pubescent; leaves ovate or oblong, acute or acuminate, the upper canescent; whorls large, loose, axillary and terminal; calyx teeth subulate, long-bearded like the bracts; the 2 lower as long as the tube. — Mountains, Alabama to North Carolina. August – Sept. — Stem 2° – 3° high. Leaves 2′ – 4′ long.

Var. **dubium,** Gray. Green throughout; calyx teeth shorter. — Ashe County, North Carolina (*Gray & Casey*).

* * *Calyx teeth nearly equal.*

+ *Calyx as long as the corolla; the teeth subulate and awn-pointed, like the rigid bracts: cymes dense-flowered.*

4. **P. aristatum,** Michx. Tomentose and hoary, or sometimes hairy; stem branched; leaves ovate or oblong, acute, sparingly serrate, rounded at the base, short-petioled, the uppermost somewhat whitened; cymes mostly terminal; ovary bearded. — Var. HYSSOPIFOLIUM, *Gray.* Stem simple or corymbose above; leaves rigid, linear-oblong, obtuse, entire. — Low ground. August – Sept. — Stem 1½° – 3° high. Leaves 1′ – 2′ long.

+ + *Calyx teeth beardless and awnless: cymes capitate, mostly terminal: bracts shorter than the flowers: leaves subsessile.*

5. **P. pilosum,** Nutt. Softly pubescent or villous; branches short, erect; leaves lanceolate, entire, acute at each end, none of them whitened; cymes small, compact, corymbose; calyx teeth ovate-lanceolate, acute, and, like the bracts, hoary-tomentose. — Upper districts of Georgia, and northward. August – Sept. — Stem 2° high. Leaves 1′ – 2′ long.

6. **P. muticum,** Pers. Smooth or tomentose; stem corymbosely branched; leaves ovate or ovate-lanceolate, acute, serrate, rounded or slightly cordate at the base, sessile or short-petioled, the uppermost whitened; cymes small, compact, corymbose, minutely hoary-tomentose; calyx teeth short, triangular-ovate, obtuse. — Dry soil. August – Sept. — Stem 1° – 2° high. Leaves 1′ – 2′ long.

7. **P. leptodon,** Benth. Stem 2° – 3° high, slightly pubescent; leaves oblong-lanceolate, serrate, smooth and green on both sides, the floral ones faintly whitened; cymes compact; calyx teeth subulate, shorter than the tube, hirsute, like the slender-pointed bracts. — Mountains of North Carolina. August.

8. **P. Torreyi,** Benth. Stem more or less pubescent, nearly simple; leaves (not whitened) linear-lanceolate, acute at both ends, nearly sessile and entire; calyx teeth subulate. — Tennessee (*Dr. Gattinger*), and northward. — Stem 2° – 3° high. Leaves 2′ long.

← ← ← *Cymes capitate, in compact corymbose clusters: bracts shorter than the flowers: stem and rigid entire leaves smoothish.*

9. **P. lanceolatum,** Pursh. Stem branched; leaves lanceolate or linear-lanceolate, acute, rounded at the base; cymes numerous, pubescent; bracts ovate-lanceolate; calyx teeth short, triangular. — Dry soil in the upper districts. August – Sept. — Stem 2° high. Leaves 1′ – 2′ long.

10. **P. linifolium,** Pursh. Stem branched; leaves very numerous, linear, sessile; cymes smoothish; bracts linear, acute; calyx teeth lanceolate-subulate, rigid, acute. — Dry soil. August – Sept. — Stem 2° high.

11. **P. nudum,** Nutt. Smooth; stem simple or corymbose at the summit straight; leaves sessile, ovate-oblong, obtuse, rounded at the base; cymes smooth; exterior bracts narrow-lanceolate, the inner short, subulate; calyx teeth short, triangular-lanceolate, and, like the corolla, pubescent. — Low pine barrens, Alabama and Florida. August – Sept. Stem 2° high. Leaves ½′ – 1′ long.

← ← ← ← *Cymes axillary and terminal, large, dense-flowered: bracts ciliate.*

12. **P. montanum,** Michx. Stem slender, smooth, simple or branched; leaves smooth, ovate-lanceolate, serrate, acute, tapering into a short petiole, the lowest rounded at the base; cymes globose, the upper ones closely sessile; bracts numerous, ciliate; the exterior ovate, very acute, as long as the flowers, the inner ones linear; calyx teeth short, acute; ovary bearded. — Mountains of North Carolina. July – August. — Stem 1° – 3° high. Leaves 2′ – 3′ long.

7. COLLINSONIA, L. Horse Balm.

Calyx obovate, enlarged and deflexed in fruit, 2-lipped; the upper lip flattened, truncate, 3-toothed, the lower 2-cleft. Corolla funnel-shaped, 2-lipped, dilated at the throat; the four upper lobes equal, the lowest larger, declining, toothed or fimbriate. Stamens 2 or 4, long-exserted, spreading: anther cells diverging. Nutlets smooth. — Strong-scented perennial herbs. Leaves large, coarsely serrate, dotted beneath. Flowers yellowish, opposite, in racemes or panicles. Petioles tumid at the base.

* *Fertile stamens* 2.

1. **C. Canadensis,** L. Nearly smooth; leaves ovate or oblong-ovate, acuminate, sharply serrate, acute, rounded or cordate at the base, long-petioled, the uppermost smaller, sessile; panicle elongated; bracts minute, very acute; flowering calyx very small, the upper lip much shorter than the lower, with subulate teeth; corolla 4 times as long as the calyx, yellowish. — Rich shaded soil. Sept. — Stem 2° – 4° high. Leaves 4′ – 9′ long. Corolla 3″ – 5″ long.

Var. **punctata,** Gray. Generally larger, and more pubescent; leaves obtusely serrate and more plainly dotted beneath; inflorescence glandular. — Georgia to North Carolina, near the coast. Sept.

2. **C. scabriuscula,** Ait. Stem slender, branching, glandular-pubescent above, 1° – 2° high; leaves small (1′ – 2′ long), ovate, acute or round at the base, coarsely serrate, smooth, or slightly scabrous above; inflorescence gland-

ular-pubescent; corolla yellow, the lowest lobe purple. — Rich shady woods, in the upper districts. Sept.

* * *Fertile stamens* 4.

3. **C. verticillata,** Baldw. Stem simple, smooth below; leaves 4, membranaceous, elliptical, acute, rather finely serrate, acute or obtuse at the base, short-petioled, approximate, the lower surface, like the simple long-peduncled raceme, viscid-pubescent; lower flowers whorled, the upper opposite; bracts minute; calyx teeth linear-subulate, half as long as the corolla. — Light shaded soil, chiefly in the upper districts, Georgia, and westward. May. — Stem 1° high. Corolla yellow or purplish.

4. **C. anisata,** Pursh. Viscid-pubescent; stem stout, simple or branched; leaves large, oval or ovate, acute, mucronate-crenate, mostly rounded or cordate at the base, the uppermost sessile; panicle many-flowered; bracts ovate; calyx lobes large, ovate-lanceolate, nearly equal; corolla large, yellow. — Dry shaded soil in the middle and lower districts. August - Sept. — Stem 1° - 2° high. Leaves 4′ - 8′ long. Corolla $\frac{1}{2}$′ - $\frac{3}{4}$′ long.

8. HEDEOMA, Pers.

Calyx tubular, somewhat gibbous under the base, equally 5-toothed or bilabiate, with the upper lip 3-toothed, the lower 2-cleft, hairy in the throat. Corolla 2-lipped; the upper lip notched or entire, the lower 3-cleft. Stamens 2, ascending: anther cells diverging. Nutlets smooth. — Herbs, with small leaves, and axillary few-flowered cymes.

1. **H. pulegioides,** Pers. (PENNYROYAL.) Annual, pubescent, much branched; leaves oblong-ovate, obtuse, sparingly serrate, pale beneath, contracted into a slender petiole; whorls 6-flowered, shorter than the leaves; lower lip of the calyx hispid. — Dry hills in the upper districts. June - Sept. — Stem 1° high. Leaves 1′ long. Corolla small, pale blue.

2. **H. graveolens,** Chapm. Stems clustered, woody at the base, pubescent (1° - 1$\frac{1}{2}$° high); leaves ovate, cordate, the lowest short-petioled, sparingly serrate; flowers single, opposite, racemose; the bracts and 2 opposite bractlets oblong, nearly equal; calyx teeth ciliate; sterile anther manifest; leaves ovoid. — Low pine barrens near Apalachicola, Florida. July.

9. SATUREIA, L. SAVORY.

Calyx bell-shaped, 10-nerved, 5-toothed. Corolla 2-lipped, the lower lip 3-lobed. Stamens 4, spreading or connivent; anthers 2-celled. Style unequally 2-cleft.

1. **S. rigida,** Bartram. Shrubby, villous; stem assurgent (1° - 1$\frac{1}{2}$° long); leaves rigid, lanceolate, entire; spikes capitate, oblong; calyx minute; corolla pale purple. — Low sandy pine barrens, South Florida.

10. MICROMERIA, Benth.

Calyx tubular, 13-nerved, nearly equally 5-toothed, mostly hairy in the throat. Corolla 2-lipped; the upper lip flat, notched or entire, the lower spreading, 3-lobed; the straight tube commonly shorter than the calyx.

Stamens 4, didynamous, arching inward: anther cells parallel, or at length diverging. Nutlets smooth. — Herbs, with the small white or purple flowers solitary, or few in a whorl, chiefly axillary.

1. **M. Brownei,** Benth. Smooth; stem prostrate or ascending, mostly simple; leaves round-ovate, obtuse, crenate or entire, short-petioled; flowers solitary, opposite, on widely spreading peduncles, exceeding the leaves, erect, purple. — River banks, Florida. July - August. — Stem 6′ - 12′ long. Leaves 4″ - 6″ long.

11. CALAMINTHA, Benth.

Calyx tubular, 13-nerved, 2-lipped; the upper lip spreading, 3-toothed, the lower 2-cleft, bearded or naked in the throat. Corolla 2-lipped, open at the throat; the upper lip notched or entire, the lower 3-lobed, the tube commonly exserted. Stamens 4, didynamous, arching inward: anther cells at length diverging. Nutlets smooth. — Herbs or shrubby plants, with white, scarlet, or purple flowers.

§ 1. CALAMINTHA. *Herbs: cymes peduncled, compound, small-bracted; the upper ones forming a 1-sided compound raceme: flowers small.*

1. **C. Nepeta,** Link. Villous; stem much branched, ascending; leaves small, ovate, obtuse, serrate, petioled; cymes numerous, dichotomous, loose-flowered; calyx bearded in the throat, half as long as the purple corolla. — Waste places and roadsides. Introduced. July - Sept. — Stem 1° - 2° long. Leaves ½′ long.

§ 2. CALOMELISSA. *Shrubs: cymes nearly sessile, axillary, few-flowered, often leafy-bracted: pedicels elongated: throat of the calyx bearded: flowers showy.*

2. **C. Caroliniana,** Sweet. Stem much branched, closely pubescent; leaves rigid, smooth, oval or oblong, obtuse, crenate, finely dotted, narrowed into a slender petiole; axillary leaves small and clustered; cymes 6-flowered, the lower bracts leafy; corolla white or purple, spotted. — Sandy or rocky banks, Florida to North Carolina. August - Sept. — Shrub 1° - 2° high, the flowering branches simple. Leaves 1′ - 1½′ long. Corolla 1′ long.

3. **C. coccinea,** Benth. Smooth or minutely pubescent; leaves obovate-oblong, obtuse, entire or obscurely crenate, tapering into a short petiole; flowers solitary or in 3-flowered bracted cymes; corolla scarlet. — Middle districts of Georgia, and westward. Oct. - Nov. — Stem 2° high, the outer bark loose and shreddy. Leaves ½′ long. Corolla 1½′ long.

4. **C. dentata,** Chapm. Densely tomentose; stem diffusely branched; leaves small, obovate or wedge-shaped, entire, or 2 - 4-toothed at the apex, nearly sessile; flowers solitary or 3 together; calyx smooth, the upper lip emarginate or obscurely 3-toothed, much shorter than the lower; corolla white or purplish, ½′ long. — Dry pine barrens, Bristol, Florida. May - Sept. — Stem 1° - 2° high. Leaves very numerous, ½′ long.

5. **C. glabella,** Benth. Herbaceous, smooth; stems slender (1° - 2° high); leaves ovate-lanceolate, obtuse, sparingly serrate, short-petioled; whorls mostly 6-flowered, sessile, the spreading pedicels twice as long as the calyx, and commonly longer than the lanceolate acute bracts; corolla pale purple. — Rocky banks, Tennessee.

12. CONRADINA, Gray.

Characters chiefly of the preceding, but the corolla abruptly bent upward at the throat, widely 2-lipped, the upper erect, the lower 3-lobed and dependent. — A canescent branching shrub, with linear persistent leaves, and purple flowers.

1. **C. canescens**, Gray. Hoary-tomentose; stem diffusely branched; leaves linear, entire, obtuse, with the margins revolute; cymes very numerous, 1 – 3-flowered; calyx smooth or hairy, the upper lip obtusely 3-toothed; corolla hairy, white or purple, dotted in the throat; anthers hairy. — Dry sands along the coast of Florida, flowering throughout the year. — Stem 1° – 2° high. Leaves $\frac{1}{2}'$ – $\frac{3}{4}'$ long. Corolla $\frac{1}{2}'$ long.

13. CERANTHERA, Ell.

Calyx tubular, 13-nerved, 2-lipped, the upper lip entire or minutely 3-toothed, the lower scarcely longer, 2-cleft, the throat bearded. Corolla 2-lipped; the upper lip erect, the lower spreading, 3-cleft. Stamens 4, didynamous, spreading, exserted: anther cells distinct, diverging, awned at the apex. Nutlets smooth. — Smooth annuals, with narrow leaves. Cymes loose, spreading, several-flowered, forming a leafy terminal raceme. Flowers purple.

1. **C. linearifolia**, Ell. Stem mostly branching, erect; leaves linear or lanceolate, serrate or entire, obtuse, sessile; cymes peduncled, 3 – 9-flowered; calyx purple, declined in fruit. — Dry sandy pine barrens, Florida, Georgia, and westward. Oct. – Nov. — Stem 1° high. Leaves 1′ long. Flowers very numerous, purple, dotted. Style hairy.

2. **C. densiflora**, Gray. Stem loosely branched; leaves oblong-lanceolate, or the uppermost linear; cymes sessile, 5 – 10-flowered. — East Florida (*Bentham*). — Cymes more compact, calyx smaller, and the awns of the anthers shorter, than in No. 1.

14. MELISSA, L. Balm.

Calyx tubular-bell-shaped, 13-nerved, 2-lipped: the upper lip flattish, 3-toothed, the lower 2-cleft, beardless in the throat. Corolla tube recurved-ascending, 2-lipped; upper lip erect, the lower 3-cleft, spreading. Stamens 4, curved and connivent under the upper lip: anther cells at length diverging. Nutlets smooth. — Herbs, with few-flowered 1-sided axillary cymes, and white or yellow flowers.

1. **M. officinalis**, L. Stem erect, branching; leaves ovate, crenate, truncate or cordate at the base; cymes 3 – 6-flowered, with ovate bracts. — North Carolina, and northward. Introduced.

15. SALVIA, L. Sage.

Calyx tubular or bell-shaped, 2-lipped; the upper lip entire or 3-toothed, the lower 2 cleft, beardless in the throat. Corolla 2-lipped; the upper lip entire or notched, the lower spreading, 3-lobed, with the middle lobe larger, entire or notched. Stamens 2, short: anther cells linear, widely separated by the elongated oblique connective; the upper one fertile, the lower imperfect or wanting. — Cymes in spikes, racemes, or panicles.

* *Upper lip of the calyx ovate, entire or 3-toothed: lower anther cell wanting.*

1. **S. azurea,** Lam. Smooth; stem simple or branched; leaves lanceolate or linear, obtuse, entire, or the lower ones serrate, tapering at the base; racemes elongated; whorls nearly sessile, 6–12-flowered; calyx longer than the pedicel, the teeth ovate, acute; corolla 2–3 times as long as the calyx, white or blue; style bearded. — Dry light or sandy soil, Florida to South Carolina, and westward. July–August. — Stem 2°–4° high. Leaves 1½′–3′ long. Corolla 6″–8″ long.

2. **S. urticifolia,** L. Stem (1°–2°) mostly simple, villous-pubescent and somewhat viscid; leaves thin, rhombic-ovate, acute, serrate, abruptly contracted into a winged petiole, the upper surface and veins beneath sparse-hairy; racemes terminal; bracts ovate, acuminate, caducous; whorls 6–12-flowered, remote; calyx bell-shaped, longer than the pedicel, broadly 3-toothed, about half as long as the blue and white corolla; style bearded. — Rich soil in the upper districts. April–May.

3. **S. Chapmani,** Gray. Tomentose; stem tall, branching; leaves thick, ovate or ovate-lanceolate, contracted into a broadly winged petiole; racemes axillary and terminal, the cordate bracts deciduous; whorls 2–6-flowered. — Dry soil, Middle Florida. May–June. — Stem 3°–5° high. Corolla pale blue.

4. **S. coccinea,** L. Pubescent; stem branching, 1°–2° high; leaves slender-petioled, cordate-ovate, acute, 1′–2′ long; racemes loose, many-flowered; calyx teeth ovate, acute; corolla scarlet. — Waste ground, escaped from cultivation. July–Sept.

5. **S. serotina,** L. Stem tomentose, branching; leaves ovate, mostly acute, crenate-serrate, tomentose, cordate or truncate at the base, petioled; racemes short, many-flowered; whorls mostly 6-flowered, the upper much crowded; calyx glandular, longer than the pedicel; corolla small, twice as long as the calyx; style beardless; the lower lobe spatulate, acute, the upper short, subulate, reflexed. — South Florida. Nov. — Stem 1° high. Leaves 1′ long, twice as long as the petiole. Corolla blue and white, 3″–4″ long.

6. **S. Blodgettii,** Chapm. Stem much branched; branches erect, filiform, pubescent; leaves small, thin, oval or ovate, slightly crenate, rounded at the apex, acute at the base, about as long as the very slender petiole; racemes filiform, few-flowered; whorls distant, 2–6-flowered; calyx somewhat glandular, acutely toothed, slightly inflated in fruit; corolla very small; lower lobe of the style spatulate, obtuse. — South Florida. — Stem 6′–12′ high. Leaves 6″–9″ long. Flowers blue.

7. **S. lanceolata,** Willd. Stem low (6′–12′ high), smooth, the branches pubescent; leaves lanceolate-linear, obtuse, obscurely serrate (1½′–2′ long), narrowed to a petiole, the floral ones subulate; whorls distant, mostly 2-flowered; corolla blue, scarcely longer than the smooth calyx. — East Florida (*Gray*), and far west.

8. **S. occidentalis,** Swartz. Stem long (2°–6°), creeping, retrorsely pubescent, the internodes swollen; leaves short-petioled, ovate, acute, serrate; racemes spike-like, many-flowered; whorls distant, mostly 6-flowered, as long as the ovate acuminate bracts; calyx glandular-villous, half as long as the

blue corolla, the teeth obtuse; lobes of the style flat, rounded. — Miami, South Florida (*Garber*).

9. **S. privoides,** Benth., var. **Garberi,** Chapm. Chiefly like the preceding, but the whorls less crowded and more distant, the calyx larger, in fruit (3‴-4‴ long), the broad teeth abruptly contracted into an awn-like point, and both lobes of the style rounded. — Manatee, South Florida (*Garber*)

* * *Upper lip of the calyx broad, 3-toothed: lower anther cell sterile.*

10. **S. lyrata,** L. Hairy; stem erect, sparingly branched; leaves chiefly radical, lyrate-pinnatifid, mostly discolored; stem leaves 2 or 4, the upper pair lanceolate and entire; raceme many-flowered; upper lip of the bell-shaped calyx truncate, with short erect teeth; corolla tube elongated. — Var. OBOVATA is less hairy, with the obovate leaves merely toothed or wavy on the margins. (S. obovata, *Ell.*) — Sandy soil. April - May. — Stem 1° high. Leaves 3′ - 6′ long, commonly purple beneath Corolla 9‴ - 12‴ long, blue.

11. **S. verbenacea,** L. Stem pubescent, 1° - 2° high; leaves ovate or oblong, pinnatifid; the upper cordate, sessile; calyx half as long as the small blue corolla, the upper lip roundish, spreading, the small teeth connivent. — Dry sandy soil, Beaufort, South Carolina (*Elliott*). Introduced.

16. MONARDA, L. Horse Mint.

Calyx tubular, elongated, 15-nerved, nearly equally 5-toothed, bearded in the throat. Corolla nearly equally 2-lipped; the upper lip notched or entire, the lower 3-toothed. Stamens 2, ascending under the upper lip, and oftener exserted: anther cells linear, diverging. Nutlets smooth. — Herbs. Leaves undivided. Whorls large, dense-flowered. Bracts colored.

* *Upper lip of the corolla linear, acute.*

1. **M. didyma,** L. Stem smoothish; leaves ovate-lanceolate, acuminate, serrate, rounded at the base, petioled, smooth or hispid; whorls mostly solitary, terminal; calyx smooth, incurved; corolla large, bright red. — Mountains of North Carolina, and northward. August - Sept. — Stem erect, 2° high. Leaves 2′ - 3′ long. Bracts lanceolate, red. Corolla 1′ long.

2. **M. fistulosa,** L. Stem branching, more or less pubescent, commonly hairy at the joints; leaves petioled, ovate-lanceolate, acute, sharply serrate, mostly rounded or truncate at the base; whorls terminal; calyx slightly incurved, densely hispid in the throat; corolla slender, rose-color. — Dry woodlands in the upper districts. August -Sept. — Stem 2° - 5° high. Leaves smoothish, tomentose, or hispid, 1′ - 3′ long. Bracts pale purple.

3. **M. clinopodia,** L. "Nearly glabrous to villous-pubescent; leaves ovate and ovate-lanceolate; bracts whitish; calyx moderately hirsute in the throat; corolla slightly pubescent (1′ long), dull white or flesh-colored." — Mountains of Georgia (*Gray*).

4. **M. Bradburiana,** Beck. Smooth or hairy; stem simple, slender, 3° high; leaves nearly sessile, ovate-lanceolate, acuminate, rounded or cordate at the base; heads solitary; bracts white or purple; calyx hirsute, its teeth long and spreading; corolla purplish. — North Alabama, Tennessee, and westward. June.

* * *Upper lip of the corolla broader, notched.*

5. **M. punctata,** L. Closely and finely pubescent; stem much branched; leaves lanceolate or oblong, acutish, slightly serrate, narrowed into a petiole; whorls lateral and terminal; bracts ovate or oblong, purple; corolla yellowish; the lower lip dotted with brown, the upper keeled; stamens not exserted. — Dry soil. August - Oct. — Stem 1° - 3° high. Leaves 1′ - 2′ long.

17. BLEPHILIA, Raf.

Calyx ovate-tubular, 13-nerved, beardless in the throat, 2-lipped; the upper lip with three awned teeth, the lower 2-cleft, awnless or short-awned. Anthers 1-celled. Otherwise like Monarda. — Stem erect. Whorls several, lateral and terminal, the upper ones crowded.

1. **B. ciliata,** Raf. Stem hirsute, leaves nearly sessile, ovate-lanceolate, finely serrate, smoothish above, paler and tomentose beneath; whorls globose, crowded, or the lower ones distinct; bracts ovate-lanceolate, long-ciliate; calyx and corolla hairy. (Monarda ciliata, *L.*) — Dry soil, in the upper districts. July - August. — Stem 2° - 3° high. Leaves 2′ - 3′ long. Corolla ½′ long, blue.

2. **B. hirsuta,** Benth. Stem hirsute; leaves long-petioled, oblong-ovate, serrate, smooth or hirsute; whorls globose, distinct, or the upper ones crowded, the lower axillary; bracts linear-subulate, long-ciliate; corolla slightly pubescent. (Monarda hirsuta, *Pursh.*) — Low ground on the mountains of North Carolina. July - August. — Stem 2° - 3° high, branching. Leaves thin, 3′ - 4′ long. Corolla pale blue.

18. LOPHANTHUS, Benth.

Calyx tubular, 15-nerved, slightly incurved, with the mouth oblique, and unequally 5-toothed, Corolla 2-lipped; the upper lip deeply notched, the lower spreading, 3-cleft, with the middle lobe crenate. Stamens 4, distant or spreading, the upper pair longer: anther cells parallel. Nutlets smooth. — Erect perennial herbs. Whorls numerous, crowded in a cylindrical spike.

1. **L. scrophulariæfolius,** Benth. Stem pubescent; leaves petioled, ovate or ovate-lanceolate, acuminate, serrate, hairy beneath; spike interrupted at the base; calyx teeth whitish, lanceolate, acute. — Mountains of Georgia, and northward. August. — Stem 3° - 4° high. Spikes 4′ - 15′ long. Bracts ovate Corolla purplish.

2. **L. nepetoides,** Benth. Smooth; leaves petioled, ovate or oblong, acute, serrate; spike interrupted at the base; calyx teeth green, ovate, barely acute. — Woods, North Carolina, and northward. August. — Stem 4° - 6° high. Bracts ovate. Corolla greenish yellow.

19. NEPETA, L. Catnip.

Lower lip of the corolla 2-cleft or entire. Stamens ascending: anthers approximate by pairs, the cells diverging. Otherwise like Lophanthus. — Corolla blue or white.

1. **N. Cataria,** L. Erect, hoary-pubescent; leaves cordate-ovate, coarsely serrate; whorls many-flowered, the upper ones crowded, the lower axillary;

calyx teeth lanceolate-subulate; corolla small, white. — Waste grounds. Introduced. — Stem 2° – 3° high.

2. **N. Glechoma**, Benth. Stem prostrate or creeping, pubescent; leaves round-cordate, obtuse, serrate; whorls in nearly all the axils, few-flowered; corolla blue. — Low shady places, near dwellings. Introduced. — Stem 4′ – 12″ long. Leaves ½′ – 1′ long. Anthers forming a cross.

20. CEDRONELLA, Mœnch.

Calyx bell-shaped, nearly equally 5-toothed; the mouth oblique. Corolla dilated at the throat, 2-lipped; the upper lip straight, 2-cleft, the lower 3-cleft, with the middle lobe largest. Stamens 4, ascending, the upper pair longest: anther cells parallel. Nutlets smooth. — Flowers in a terminal spike or raceme.

1 **C. cordata**, Benth. Stem low, pubescent, stoloniferous; leaves long-petioled, cordate, crenate, smoothish; the floral ones ovate; raceme few-flowered, 1-sided; cymes 1 – 3-flowered; calyx and pale blue corolla large. — Shady banks, on the mountains of North Carolina. May – June. — Stem 6′ high, creeping at the base. Leaves 1′ long. Corolla 1½′ long. Plant pleasant-scented.

21. BRUNELLA, Tourn. SELF-HEAL.

Calyx tubular-bell-shaped, 10-nerved, 2-lipped; upper lip broad, truncated, 3-toothed, the lower 2-cleft. Corolla 2-lipped; the upper lip roundish, entire, the lower 3-lobed, with the middle lobe rounded, concave, crenate. Stamens 4, exserted, the smooth filament prolonged above the anther: anther cells spreading. — Herbs, with 6-flowered densely-spiked whorls. Floral leaves orbicular, imbricated, persistent.

1. **B. vulgaris**, L. Pubescent or smoothish; stem erect, mostly simple; leaves ovate or oblong, serrate, petioled; spikes oblong or cylindrical; flowers purple. — Low grounds. Introduced. — Stem 6′ – 12′ high. Spikes thick, lateral and terminal.

22. SCUTELLARIA, L. SKULLCAP.

Calyx bell-shaped, 2-lipped, entire and closed after flowering; the upper lip furnished with a helmet-shaped appendage on the back, and falling away at maturity, the lower persistent. Corolla-tube dilated at the throat, 2-lipped; the upper lip arching, with the small lateral lobes united with its sides, the lowest lobe large and spreading. Stamens 4, ascending: anthers ciliate, approximate by pairs, those on the shorter filaments 1-celled, on the longer ones 2-celled, cordate. — Perennial mostly inodorous herbs. Flowers opposite, solitary, in the axils of the upper, mostly bract-like leaves, rarely in lateral racemes. Corolla blue or white.

* *Flowers in terminal racemes.*

+ *Leaves cordate, ovate, or oblong, crenate, petioled; the floral ones shorter than the flowers, entire.*

1. **S. versicolor**, Nutt. Softly pubescent; stem stout, branched above; leaves large, long-petioled, all broadly cordate, rugose and reticulate; the

floral ones ovate, sessile; racemes terminal and axillary, many-flowered, viscid; calyx hairy; lateral lobes of the corolla conspicuous. — Dry open woods in the upper districts. July – Sept. — Stem 1° – 2° high. Leaves 2′ – 4′ long. Racemes 3′ – 6′ long. Corolla 6″ – 8″ long, blue and white.

Var. **minor.** Small (6′ – 12′); leaves tomentose, finely crenate; the lowest orbicular, the upper ovate-lanceolate, truncated at the base (½′ – 1′ long), the floral ones narrower. — Dry woods in the upper districts. August.

2. **S. saxatilis,** Riddell. Smooth or nearly so; stem ascending, slender, 8′ – 12′ high; leaves 1′ – 2′ long, thin, the lower cordate-ovate, coarsely crenate, obtuse, long-petioled, the floral ones oblong, entire; racemes loose; flowers small, blue. (S. arguta, *Buckl.*, a pubescent form.) — Mountains of North Carolina. July – August.

3. **S. canescens,** Nutt. Stem erect, tomentose, branching above; leaves ovate or oblong-ovate, acute, smoothish, paler and puncticulate beneath, short-petioled, the lower ones cordate, the upper lanceolate; racemes axillary and terminal, pubescent, many-flowered; corolla blue and white. — Dry open woods, Florida and Georgia. July – August. — Stem 2° – 3° high. Leaves 2′ – 3′ long. Corolla 8″ – 9″ long.

4. **S. serrata,** Andr. Smooth; stem erect, branched; leaves ovate, acute, smooth and green on both sides, decurrent into the margined petiole; the floral ones small, lanceolate; racemes short, simple, few-flowered, 1-sided; calyx mostly hairy; corolla large, blue. — Dry woods, North Carolina. — Stem 2° – 3° high Leaves 1′ – 1½′ long. Corolla 1′ long.

5. **S. montana,** Chapm Softly pubescent; stem mostly simple (1½° – 2° high); leaves of the stem, and lowest floral ones, ovate or oblong-ovate, coarsely serrate, acute at each end, the lowest cordate; racemes few-flowered; corolla large (1′ – 1½′ long), blue, the ample lower lip nearly as long as the upper one. — Dry woods, and margins of fields, on the mountains of Georgia. July – August.

6. **S. pilosa,** Michx. Hirsute or closely pubescent; stem simple or sparingly branched; leaves distant, ovate, obtuse, coarsely crenate; the lowest rounded at the base, the upper ones abruptly short-petioled; racemes short, few-flowered; corolla pale blue. — Dry soil. July – August. — Stem 1° – 2° high. Leaves 1′ – 2′ long. Corolla 8″ – 9″ long, the tube slender.

7. **S. villosa,** Ell. Stem erect, branching, villous; leaves large, lanceolate, acute at each end, coarsely toothed, villous beneath, hispid above; racemes paniculate, with the flowers crowded. — Georgia, between the Ocmulgee and Flint Rivers (*Elliott*). May – July. — Stem 2° – 3° high. Leaves 3′ – 4½′ long, on petioles ½′ long.

+ + *Upper and floral leaves alike, entire, nearly sessile; the lower broader, petioled, and mostly crenate.*

8. **S. brevifolia,** Gray? Pubescent; stem mostly simple (6′ – 12′ high); leaves small (½′ – 1′ long), rigid, lanceolate, obtuse, entire, tapering downward, sessile; the lowest ovate or obovate, short-petioled, crenate or entire, the lower floral ones sometimes longer than the flowers; racemes leafy, few-many-flowered. — Dry sandy soil, Georgia and Florida. May – June.

9. **S. integrifolia,** L. Softly pubescent; stem simple or branching, 6′ – 2° high; leaves ½′ – 1½′ long, obtuse, the lower ovate or cordate, crenate, long-petioled, the upper lanceolate, mostly entire; racemes leafy; corolla 8″ – 10″ long, dilated upward, the ample lower lip longer than the upper one. — Low ground. May – July.

+– +– +– *Leaves all linear and entire; the lowest bract-like.*

10. **S. Floridana,** Chapm. Minutely pubescent; stem slender, branching; leaves obtuse, sessile, with revolute margins; the floral ones shorter than the flowers; racemes loose, few-flowered; corolla large, much dilated at the throat, the nearly equal lips broad and obtuse; filaments hairy at the base. — Pine barren swamps near the coast, West Florida. July. — Stem 1° high. Leaves 1′ long, ½″ – 1″ wide. Corolla 1′ long, deep blue, the lower lip white in the middle.

* * *Flowers small, in axillary racemes*

11. **S. lateriflora,** L. Smooth; stem elongated, diffusely branched; leaves petioled, ovate-lanceolate, coarsely serrate, acuminate, the lower rounded at the base; racemes slender, 1-sided; corolla blue. — Shady swamps. July – Sept. — Stem 2° – 3° high. Leaves membranaceous, 2′ – 3′ long. Corolla 2″ long.

* * * *Flowers solitary in the axils of the upper leaves.*

12. **S. galericulata,** L. Stem erect or ascending, simple or branched, smooth or pubescent; leaves short-petioled, ovate-lanceolate, acute, slightly crenate, rounded or subcordate at the base, paler and pubescent beneath; flowers nearly sessile, turned to one side. — Wet shaded places, North Carolina, and northward. July – August. — Stem 1° – 2° high. Leaves 1′ – 1½′ long Corolla 7″ – 8″ long, blue, the lower lip white in the middle, spotted with blue.

13. **S. parvula,** Michx. Stem low, pubescent; leaves ovate or oblong, obtuse, mostly entire, nearly sessile, strongly veined; flowers small — Dry ground. May – June. — Fibres of the root often bearing small tubers. Stem 6′ – 9′ high. Leaves 4″ – 6″ long. Corolla blue, 2″ – 3″ long.

14. **S. nervosa,** Pursh. Nearly glabrous; stem slender, mostly simple, the angles acute, 1° – 1½° high; leaves thin, obtuse, prominently nerved, the lowest ovate, cordate, coarsely serrate; the upper narrower and sessile; flowers small, blue; seed winged. — Low shady woods, Tennessee, and northward. July.

23. MACBRIDEA, Ell.

Calyx tubular-bell-shaped, 3-lobed; the upper lobe lanceolate, entire, the two lower ones oblong, notched or entire. Corolla inflated, 2-lipped; the upper lip arching, concave, the lower broadly 3-lobed, spreading. Stamens 4, ascending under the upper lip. Filaments hairy: anthers approximate by pairs, the cells diverging, hairy and denticulate on the margins. Nutlets smooth. — Erect mostly simple perennials. Flowers opposite, crowded in a dense cone-like terminal head. Corolla large, white or purple.

1. **M. pulchra,** Ell. Smooth or hairy; leaves lanceolate, acute, serrulate, dotted; the lower ones narrowed into a petiole, the upper sessile, the floral ones ovate, acute; calyx striate, the lobes entire; corolla purple, the

tube striped with purple and white, the upper lip entire. — Pine barren swamps, Georgia to North Carolina. August - Sept. — Stem 1° - 1½° high. Corolla 1½′ long.

2. **M. alba,** Chapm. Smooth or hirsute; leaves wedge-lanceolate or oblong, toothed, rounded at the apex, narrowed to the sessile base; the lowest oblong, tapering into a slender petiole; the floral ones ovate or orbicular, obtuse; calyx nerveless, with the two larger lobes notched; corolla white, the upper lip emarginate. — Low pine barrens, West Florida, near the coast. July - August. — Stem 1° - 1½° high. Leaves 2′ long, or the radical ones 4′ - 5′ long, and, like the calyx and corolla, thick and somewhat fleshy.

24. SYNANDRA, Nutt.

Calyx inflated, bell-shaped, 4-toothed. Corolla 2-lipped, the upper lip entire, the lower broadly 3-lobed, spreading. Stamens 4, ascending under the upper lip, hairy; anthers smooth, the contiguous cells of the upper pair smaller, sterile, and connate. Nutlets large, smooth, angular.

1. **S. grandiflora,** Nutt. Biennial; stem simple, hairy (1° - 1½° high); leaves thin, long-petioled, cordate, crenate-serrate, obtuse, the floral ones narrower, acuminate, sessile; corolla large (1½′ long), yellowish white; calyx teeth acute. — Shady woods, Tennessee, and northward. June.

25. PHYSOSTEGIA, Benth.

Calyx tubular-bell-shaped, inflated in fruit, nearly equally 5-toothed. Corolla tubular-funnel-shaped, 2-lipped; the upper lip erect, concave, entire or notched, the lower spreading, broadly 3-lobed. Stamens 4, ascending under the upper lip: anthers approximate, with the cells parallel, ciliate. Nutlets smooth, acutely 3-angled. — Smooth perennial herbs, with erect mostly simple stems, and opposite showy purplish flowers, in terminal spikes or racemes.

1. **P. Virginiana,** Benth. Leaves large (6′ - 9′ long), oblong, sharply serrate, the lowest narrowed into a petiole; spikes thick, dense-flowered; calyx teeth acute; corolla 1′ long. — Varies through several intermediate forms into var. DENTICULATA, with lanceolate or linear denticulate or entire leaves, and smaller (6″ - 9″ long) flowers, in a long loosely flowered spike. — Low ground and swamps. June - August. — Stem 2° - 4° high. Racemes simple or compound.

26. LAMIUM, L. Dead Nettle.

Calyx tubular-bell-shaped, 5-nerved, nearly equally 5-toothed, the teeth subulate, not spiny. Corolla slender, dilated at the throat, 2-lipped; the upper lip ovate or oblong; the lateral lobes small, at the margins of the throat; the lowest large, notched, short-stalked. Stamens 4, ascending under the upper lip. Nutlets 3-angled, truncate at the apex. — Herbs. Leaves incised; the lower ones petioled, the floral ones sessile, longer than the dense whorls.

1. **L. amplexicaule,** L. Leaves orbicular, incisely crenate-lobed; the floral ones clasping, the others petioled; tube of the corolla straight, the

lateral lobes truncate; anthers hairy. — Cultivated ground and waste places, common. May. ① — Stems 4′–12′ high. Corolla small, purple, often imperfectly developed.

27. MARRUBIUM, L. HOREHOUND.

Calyx tubular, 5–10-nerved, nearly equally 5–10-toothed, the teeth spiny, mostly spreading in fruit. Corolla-tube included in the calyx, 2-lipped; the upper lip erect; the lower 3-lobed, with the middle lobe largest. Stamens 4, included: anther cells diverging. Lobes of the style short, obtuse. Nutlets obtuse at the apex. — Chiefly tomentose or woolly perennial herbs, with rugose leaves, and axillary whorls.

1. **M. vulgare,** L. Woolly; stems branching at the base, ascending; leaves petioled, ovate or roundish, crenate, the floral ones smaller, but longer than the capitate many-flowered whorls; calyx teeth 10, recurved-spreading; corolla small, white. — Waste ground and roadsides. Introduced. — Stems 1°–2° high.

28. LEONOTIS, R. BROWN.

Calyx tubular, 10-nerved, incurved, unequally 8–10-toothed; the teeth straight, spiny, the upper one largest. Corolla slender, 2-lipped; the upper lip long, arching, entire, the lower very short, 3-cleft, spreading. Stamens 4, ascending under the upper lip: anther cells diverging. Nutlets 3-angled, truncate. — Tall herbs, with very large globose whorls in the axils of the upper leaves. Flowers yellow or scarlet.

1. **L. nepetæfolia,** R. Br. Annual; stem tomentose, simple or branched; leaves remote, long-petioled, broadly ovate, crenate, the floral ones lanceolate; whorls 1 to several; calyx 8-toothed; corolla villous, scarlet. — Waste grounds, Georgia and Florida. June–August. Introduced. — Stem 1°–6° high. Whorls 1′–2′ in diameter. Corolla 1′ long.

29. LEONURUS, L. MOTHERWORT.

Calyx top-shaped, 5-nerved, 5-toothed, the teeth spiny and at length spreading. Corolla 2-lipped; the upper lip entire, the lower spreading, 3-lobed, with the middle lobe obcordate. Stamens 4, ascending: anther cells parallel, naked. Nutlets 3-angled, truncate. — Herbs, with incisely lobed leaves; the floral ones longer than the dense whorls. Bracts subulate.

1. **L. Cardiaca,** L. Stem (2°–4° high) square, pubescent; leaves long-petioled, the lower ones round-cordate, palmately lobed and toothed; the floral wedge shaped, 3-cleft toward the apex; whorls distant, 6–15-flowered; corolla villous, purplish, spotted with brown in the throat. — Waste places. Introduced. June–July.

30. STACHYS, L. HEDGE NETTLE.

Calyx tubular bell shaped, 5- or 10-nerved, 5-toothed; the teeth equal, or the upper one larger, more or less spine-pointed (in our species), spreading in fruit. Corolla hairy within, 2-lipped; the upper lip erect, the lower spreading, 8-lobed, with the middle lobe much larger. Stamens 4, ascending: anthers 2-celled. Nutlets not truncate. — Chiefly hairy or hispid herbs, with few-flowered whorls in terminal racemes.

1. **S. aspera,** Michx. Stem erect, with the angles rough with recurved bristly hairs, rarely smoothish; leaves short-petioled, ovate-oblong or ovate-lanceolate, acute, serrate, rounded at the base, smooth, or sprinkled with hairs above; the floral ones longer than the calyx; whorls 6 – 10-flowered, the lower ones distant; calyx-teeth spine-pointed. — Swamps, South Carolina, and northward. June – August. — Stem 1½° – 2° high. Leaves 2′ – 3′ long. Corolla purple.

2. **S. cordata,** Riddell. Stem slender, more or less hirsute; leaves thin, oblong-cordate, crenate, acuminate, long-petioled, the floral ones minute; calyx teeth broadly subulate. — Banks of streams on the mountains of Georgia and Tennessee. August.

3. **S. hyssopifolia,** Michx. Smooth or nearly so; stem erect, slender; leaves sessile, lanceolate or linear, obtuse, entire or sparingly serrate; raceme short, of few 4 – 6-flowered whorls; calyx smooth, with spiny spreading teeth, a third to half as long as the smooth violet corolla. — Wet pine barrens, in the middle districts of South Carolina, and northward. June – August. — Stem 1° – 1½° high. Leaves 1′ – 2′ long.

4. **S. Floridana,** Shuttlw. Smooth or hirsute; stem slender, erect; leaves lanceolate or oblong, petioled, or the upper ones sessile, acute or obtuse, serrate, truncate, or the lowest subcordate at the base; whorls few or numerous, distant, 6 – 10-flowered; calyx pubescent, with lanceolate-subulate rigid teeth; corolla twice as long as the calyx, purple. — Low grounds, Florida. July. — Stem 10′ – 15′ high. Leaves 1′ long, the lowest shorter than the petiole.

31. ISANTHUS, Michx.

Calyx bell-shaped, 10-nerved, 5-cleft. Corolla bell-shaped, equally 5-lobed. Stamens 4, incurved-ascending, exserted: anthers 2-celled. Nutlets obovoid, impressed-reticulated, laterally cohering at the base. — An annual pubescent and somewhat viscid branching herb, with lanceolate entire or sparingly toothed acute leaves, and small pale blue flowers on 1 – 3-flowered axillary peduncles.

1. **I. cœruleus,** Michx. — Dry soil in the upper districts. July – August. — Stem terete, 1° – 1½° high. Leaves 1′ – 1½′ long, 3-nerved below the middle.

32. TRICHOSTEMA, L. Blue Curls.

Calyx short, reversed, oblique, 5-toothed; the 3 lower teeth long, connate; the 2 upper ones very short. Corolla slender, nearly equally 5-cleft. Stamens 4, long-exserted, partly coiled: anther cells diverging. Nutlets pitted, united at the base. — Branching annuals, with entire leaves, and solitary blue flowers on lateral peduncles.

1. **T. dichotomum,** L. Pubescent and somewhat viscid, or nearly smooth; stem much branched, obscurely 4-angled; leaves oblong or lanceolate, obtuse, narrowed into a petiole. (T. lineare, *Nutt.*, a smoother form, with linear leaves.) — Dry sandy soil. August – Sept. — Stem 1° – 2° high.

33. TEUCRIUM, L. GERMANDER.

Calyx tubular or bell-shaped, 5-toothed. Corolla 5-lobed; the 4 upper lobes short, the lowest large, oblong or rounded, concave. Stamens 4, didynamous, the lower pair longest, exserted between the 2 upper lobes of the corolla: anther cells confluent. Nutlets rugose.

1. **T. Canadense,** L. Stem tomentose, erect, simple or branched; leaves short-petioled, ovate-lanceolate, acute, serrate, pubescent above, white-velvety beneath; flowers mostly alternate, in a long hoary raceme, longer than the subulate bracts; calyx bell-shaped. — Swamps and low ground. July – Sept. ♃ — Stem 2° – 3° high. Leaves 2′ – 6′ long. Flowers purplish.

PERILLA OCYMOIDES, L., cultivated as a foliage plant, is spontaneous along roads in the upper districts, and the Thyme of the garden (THYMUS SERPYLLUM, L.) is sparingly naturalized in North Carolina.

ORDER 103. PLANTAGINACEÆ. (PLANTAIN FAMILY.)

Chiefly stemless herbs, with radical mostly ribbed leaves, and small whitish spiked or capitate flowers, borne on a naked scape. — Calyx of 4 imbricated sepals, with scarious margins. Corolla salver-shaped, 4-parted, withering. Stamens 2 – 4, included or exserted, inserted on the tube of the corolla, and alternate with its lobes: anthers 2-celled, deciduous. Style slender. Ovary free, 2 – 4-celled. Capsule 2-celled, few – many-seeded, opening transversely. Seeds attached to the deciduous partition. Embryo straight in fleshy albumen.

1. PLANTAGO, L. PLANTAIN.

Characters same as the order.

* *Flower perfect.*

1. **P. major,** L. Leaves ovate or oval, smooth or pubescent, 5 – 7-ribbed, mostly toothed, narrowed into a broad concave petiole; scape pubescent; spike long-cylindrical, densely many-flowered; bracts ovate; capsule many-seeded. — Low ground around dwellings. Introduced. May – August. — Scape 6′ – 12′ high. Leaves 4′ – 6′ long.

2. **P. cordata,** Lam. Smooth; leaves broadly ovate or cordate, toothed, 7 – 9-ribbed, on long flat petioles; spike long-cylindrical, rather loosely flowered; bracts roundish; capsule 2 – 4-seeded. — Low ground in the upper districts. April – June. ♃ — Scape 1° high. Leaves 3′ – 8′ long.

3. **P. Rugelii,** Decaisne. Leaves smooth or pubescent, oblong, entire or obscurely denticulate, 3 – 5-ribbed; spike cylindrical, rather loosely flowered; bracts acute, shorter than the smooth calyx; capsule conical, 4-seeded. — Low ground in the upper districts. — Plant small. Scape slender, 6′ – 10′ high.

4. **P. Patagonica,** Jacq. Annual, villous, or sometimes smoothish, leaves lanceolate or linear, shorter than the scape; spike oblong or capitate;

bracts shorter than the flower; lobes of the corolla rounded; capsule 2-seeded. — Nashville, Tennessee (*Gattinger*), and westward.

Var. **aristata,** Gray. Leaves linear-lanceolate; spike linear, the filiform bracts 3 – 6 times the length of the flower. — Waste ground, Georgia, and westward. — Scape 1° or less high.

5. **P. lanceolata,** L. Smooth or pubescent; leaves lanceolate, acute, denticulate, 3 – 5-ribbed, long-petioled; spikes dense, ovate or oblong; capsule 2-seeded. — Pastures and waste ground. Introduced. — Scape 1° – 2° high. Spikes 1′ – 2′ long.

6. **P. sparsiflora,** Michx. Leaves smooth, lanceolate, toothed or entire, narrowed into a long petiole; scape much longer than the leaves, pubescent below; spike long, loosely flowered; bracts ovate: calyx lobes obtuse; capsule 2-seeded. — Moist pine barrens, Georgia and South Carolina. June – Sept. — Spikes 6′ – 9′ long.

* * *Flowers diœcious: annuals.*

7. **P. Virginica,** L. Pubescent; leaves lanceolate or oblong, toothed or entire, 3 – 5-ribbed, on rather short petioles; spike cylindrical, densely flowered; stamens 4; capsule 2 – 4-seeded. — Low sandy soil, very common. April – June. — Scape 1′ (and then 2 – 4-flowered) – 1° high. Leaves ½′ – 6′ long.

8. **P. heterophylla,** Nutt. Smooth or pubescent; leaves somewhat fleshy, linear, entire, or with scattered spreading teeth; spikes linear, closely flowered; the lower flowers scattered; stamens 2, exserted; capsule many-seeded, twice the length of the calyx. — Waste places and fields. April – May. — Scape 2′ – 6′ high, commonly longer than the leaves.

9. **P. pusilla,** Nutt. Small (1′ – 2′ high), slightly pubescent; leaves narrow-linear, entire; capsule ovoid, rather longer than the calyx, 4-seeded. — Tennessee, and northward.

DIVISION III. APETALOUS EXOGENOUS PLANTS.

Floral envelopes single, consisting of a calyx only, or altogether wanting.

ORDER 104. ARISTOLOCHIACEÆ. (BIRTHWORT FAMILY.)

Herbs or woody vines, with alternate petioled mostly cordate and entire leaves, and solitary peduncled dull-colored flowers. — Calyx adherent to the 5 – 6-celled ovary, tubular, valvate in the bud. Stamens 5 – 12, more or less united with the styles: anthers adnate, extrorse. Fruit 5 – 6-celled, few – many-seeded. Seed anatropous. Embryo minute, at the base of fleshy albumen.

1. ASARUM, Tourn. ASARABACCA.

Calyx regular, 3-lobed. Stamens 12, the filaments partly united with the style, and usually prolonged beyond the anthers. Capsule fleshy, globose, opening irregularly. — Aromatic perennial herbs, with creeping stems, long-petioled cordate or kidney-shaped leaves, and axillary peduncled flowers.

§ 1. ASARUM. — *Calyx bell-shaped, adnate to the ovary, 3-parted: filaments free or nearly so: stigma 6-lobed. — Leaves deciduous.*

1. **A. Canadense,** L. (WILD GINGER-ROOT.) Pubescent; leaves 2, kidney-shaped; calyx lobes acuminate; filaments as long as the style. — Mountains of North Carolina, and northward. April – May. — Flowers short-peduncled, purple within.

§ 2. HETEROTROPA. — *Calyx inflated, nearly free from the ovary, 3-cleft: filaments united with the ovary: styles 6: stigma 2-cleft. — Leaves evergreen, smooth, mottled.*

2. **A. Virginicum,** L. Leaves round-cordate; calyx inflated-bell-shaped, with rounded lobes; stigmas deeply 2-cleft. — Rich shady woods in the upper districts. April – May. — Leaves single or 2 – 3 together, 2′ long. Calyx 8″ – 9″ long, nearly sessile at the base of the petioles, greenish without, dull purple within.

3. **A. arifolium,** Michx. Leaves oblong-cordate or hastate; calyx pitcher-shaped, with rounded lobes; stigmas slightly 2-cleft. — Shady woods. March – April. — Leaves 3′ – 4′ long, auriculate at the base, long-petioled. Calyx 1′ long, distinctly peduncled, contracted above the middle, dark purple within.

2. ARISTOLOCHIA, Tourn. BIRTHWORT.

Calyx tubular, commonly bent and inflated above the ovary. Anthers 5 – 6, sessile, adnate to the 3 – 6-lobed or angled stigma. Capsule 5 – 6-valved. — Erect or twining herbs or shrubs. Leaves alternate, cordate at the base. Flowers long-peduncled, axillary, or near the base of the stem.

* *Stamens* 6.

+ *Low herbs.*

1. **A. Serpentaria,** L. (SNAKEROOT.) Stems single or clustered, pubescent, zigzag and leafy above; leaves short-petioled, varying from ovate to linear-lanceolate, cordate or hastate at the base; flowers near the base of the stem, on bracted spreading peduncles; calyx tortuous, 3-lobed, dull purple. — Shady woods. June – August. — Stem 8′ – 12′ high. Leaves 2′ – 4′ long. Calyx shaped like the letter S.

+ + *Woody vines: capsule oblong, 6-angled, 3′ – 4′ long.*

2. **A. Sipho,** L'Her. Stem smoothish; leaves large, orbicular-cordate, slightly pubescent beneath; peduncles slender, solitary, with a roundish clasping bract near the base; calyx curving upward, with the broad spreading brownish purple border obscurely 3-lobed. — Rich woods along the mountains. May. — Stem climbing high. Leaves 6′ – 12′ broad. Calyx shaped like a Dutch pipe, 1½′ long.

3. **A. tomentosa,** Sims. Hoary-pubescent; leaves cordate; peduncles opposite the leaves, bractless, woolly; calyx bent in the middle, the greenish rugose unequally 3-lobed border reflexed, thickened and dark brown at the nearly closed throat. — River banks, chiefly in the upper districts. May. — Stem very long. Leaves 3′ – 5′ long. Calyx similar in shape to the preceding, but smaller.

* * *Stamens* 5.

4. **A. pentandra,** L. Perennial, herbaceous, smoothish; stem prostrate or twining; leaves ovate, cordate; flowers axillary; limb of the calyx lanceolate, acuminate, deep green, much longer than the 5-angled tube. — Miami, South Florida (*Garber*).

ORDER 105. NYCTAGINACEÆ. (FOUR-O'CLOCK FAMILY.)

Herbs or shrubs with tumid joints. Leaves mostly opposite, simple, petioled, without stipules. — Calyx colored and resembling a corolla, tubular-bell-shaped or funnel-shaped, free from the 1-celled and 1-ovuled ovary, plaited in the bud, contracted in the middle, with the upper portion deciduous. Stamens 1 – several, hypogynous: anthers 2-celled, roundish. Ovule erect. Style simple: stigma simple or branched. Achenium enclosed in the indurated, mostly ribbed, often glandular base of the calyx. Embryo coiled or folded around copious mealy albumen. Cotyledons leafy. Radicle inferior.

Synopsis.

* Flowers surrounded by a calyx-like involucre.

1. OXYBAPHUS. Involucre open, membranaceous, 5-lobed. Herbs.

* * Flowers without an involucre.

2. BOERHAAVIA. Flowers perfect. Embryo coiled. Herbs.
3. PISONIA. Flowers diœcious. Embryo straight. Shrubs.

1. OXYBAPHUS, Vahl.

Flowers perfect, 1 – 5 in a cluster, surrounded by an open cup-shaped 5-lobed involucre. Calyx tube very short; the bell-shaped limb 5-lobed, deciduous. Stamens 3, exserted. Style slender: stigma capitate. Achenium enclosed in the indurated ribbed persistent base of the calyx. — Erect herbs, from thick perennial roots. Leaves opposite. Flowers terminal, purple or rose-color.

1. **O. angustifolius,** Sweet. Stem smoothish, branching above; leaves linear lanceolate, smooth, obtuse at the sessile base; the upper ones distant, acute; flowers loosely panicled; involucre with rounded hairy lobes, at length enlarged and strongly nerved, 3-flowered; base of the calyx villous. — South Carolina, and westward. — Stem 3° – 4° high. Leaves 2′ long. Calyx 4″ – 5″ long, whitish, veiny.

2. **O. albidus,** Sweet. Stem erect, 4-angled, furrowed, glandular-pubescent; branches opposite; leaves oblong-lanceolate, roughish; peduncles opposite, the lower ones solitary, the upper clustered; involucre hairy; base of the calyx 5 – 6-angled, almost hispid. (Allionia, *Ell.*) — Near Columbia, South Carolina (*Elliott*).

3. **O. nyctagineus,** Sweet. Stem smoothish, 4-angled, forking; leaves petioled, deltoid-ovate; flowers clustered, terminal; involucre 3 – 5-flowered, becoming large and veiny. — West Tennessee, and westward. July – August. — Stem 1° – 2° high.

2. BOERHAAVIA, L.

Flowers perfect. Calyx tube cylindrical or obconical, 5-ribbed; the limb colored, funnel-shaped, 5-lobed, deciduous. Stamens 1 – 4: anthers minute, roundish. Style slender: stigma obtuse. Embryo folded. — Annual herbs, with diffuse branching stems, and opposite ovate or rounded leaves. Flowers small, in solitary or panicled clusters.

1. **B. erecta,** L. Stems ascending, branched from the base, smooth; branches alternate; leaves ovate or roundish, acute or mucronate, often more or less cordate, wavy along the margins, whitened and minutely dotted with black beneath; clusters 3 – 5-flowered, in ample panicles; stamens 2; fruit smooth, obconical, truncate, strongly ribbed. — Cultivated ground, Florida to South Carolina. July – Sept. — Stem 1° – 3° long. Leaves rather thick, 2′ – 3′ long. Flowers small, purple.

2. **B. hirsuta,** Willd. Stem diffuse, alternately branched, minutely pubescent, hirsute above; leaves ovate or oblong-ovate, mucronate, obtuse at the base, undulate, smooth, and similarly colored on both sides, ciliate on the margins; clusters 3 – 6-flowered, forming a loose spreading panicle; flowers minute; calyx limb hairy at the apex; fruit obconical, rounded at the apex, with the ribs glandular-viscid. — South Florida. — Stem stout, 2° – 3° long. Leaves 1′ – 2′ long.

3. **B. viscosa,** Lag. Viscid or minutely pubescent; stem terete, straight; branches opposite; leaves ovate-oblong or ovate-lanceolate, mucronate, acute at the base, smooth, whitish beneath, slender-petioled; peduncles solitary, axillary, 2-cleft, mostly shorter than the leaves; flowers capitate, minute; stamens 3; fruit club-shaped, acutish, with the ribs glandular. — South Florida. — Stem 2° – 3° long. Leaves 1′ – 1½′ long.

3. PISONIA, Plum.

Flowers diœcious. Calyx 5- or 10-toothed, funnel-shaped in the sterile flowers, tubular and persistent in the fertile. Stamens 6 – 10, exserted: anther cells distinct. Style mostly lateral: stigma many-cleft. Fruit terete or ribbed, smooth or glandular. Embryo straight. Cotyledons folded around the albumen. — Trees or shrubs, with opposite or alternate leaves, and mostly rose-colored flowers in corymbose cymes.

1. **P. aculeata,** L. Spiny; stem smooth; branches widely spreading; leaves alternate, ovate or elliptical, acute or obtuse, smooth; cymes terminal, peduncled, pubescent, many-flowered; calyx of the sterile flower 10-toothed; stamens 7; fruit club-shaped, 10-striate, and beset with 5 rows of shining viscid glands. — South Florida. — Shrub 5° high; the spines short and recurved. Leaves 1′ – 2′ long.

2. **P. obtusata,** Swartz. Smooth, spineless; leaves obovate-oblong, revolute on the margins, rigid; cymes long-peduncled, many-flowered, the branches horizontal; fertile calyx 5-cleft, with the lobes narrow and acute; stamens 7; fruit oblong, many-furrowed, glandless; capsule truncate. — South Florida. — Leaves opposite, 1′ – 2′ long. Flowers 1″ – 2″ long.

3. **P. rotundata,** Griseb. Spineless; leaves obovate, rounded at the base, short-petioled (1′ long); cymes divaricate, sessile or short-peduncled; flowers clustered; sterile calyx 5-toothed, the fertile clavate-oblong, obtuse-angled, glandular above the middle, the glands stipitate. — Keys of South Florida (*Curtiss*).

ORDER 106. PHYTOLACCACEÆ. (POKEWEED FAMILY.)

Herbs or shrubs, with alternate entire leaves, and apetalous 3-bracted racemed or spiked flowers. — Calyx composed of 4 – 5 nearly equal sepals, more or less united at the base, unchanged in fruit. Stamens hypogynous, as many as the sepals and alternate with them, or numerous, free, or united at the base; sterile ones none: anthers 2-celled, introrse. Ovary simple or compound. Ovules amphitropous or campylotropous, solitary, erect. Styles as many as the ovaries. Fruit of 1 – many carpels. Albumen copious or none. Embryo annular, rarely straight. Radicle inferior.

Synopsis.

SUBORDER I. **PETIVERIEÆ.** Fruit simple. Cotyledons convolute. Leaves stipulate.

1. **PETIVERIA.** Fruit an achenium with reflexed spines at the apex. Embryo straight in scanty albumen.
2. **RIVINA.** Fruit a berry. Embryo forming a ring around the albumen.

SUBORDER II. **PHYTOLACCEÆ.** Fruit compound. Cotyledons flat. Leaves exstipulate.

3. **PHYTOLACCA.** Fruit a berry, composed of numerous carpels arranged in a circle.

1. PETIVERIA, Plum.

Calyx 3-bracted, 4-parted, herbaceous. Stamens 4 – 8: anthers linear. Ovary simple, 1-celled. Ovule single, erect, amphitropous. Stigma many-cleft. Achenium wedge-shaped, compressed, 2-lobed at the apex, each lobe armed with 2 – 3 reflexed spines. Albumen almost none. Embryo straight. Cotyledons unequal, convolute. — Shrubby tropical plants, with entire stipulate leaves, and small greenish flowers in an elongated and slender spike.

1. **P. alliacea,** L. — South Florida. — Stem 2° – 3° high, closely pubescent. Leaves 3′ – 4′ long, oblong or obovate, obtuse, narrowed into a short petiole, pubescent beneath. Spikes filiform, single or by pairs, 6′ – 12′ long. Calyx lobes linear, incurved at the apex. Stamens 4 – 5. Achenia erect, appressed to the rachis, with two spines at each lobe. Stipules subulate, minute.

2. RIVINA, Plum.

Calyx remotely 3-bracted, 4-parted, colored. Stamens 4 – 8: anthers ovate or oblong. Ovary simple. Ovule solitary, amphitropous. Stigma capitate or many-cleft. Berry nearly globose, at length dry. Embryo forming a ring around the copious albumen. Cotyledons somewhat leafy, convolute. — Shrubs, with alternate minutely stipulate petioled leaves, and small white or rose-colored flowers in axillary and terminal racemes. Bracts deciduous.

1. **R. humilis,** L. Closely pubescent or glabrous; stem with spreading branches; leaves oblong-ovate, rounded at the base, tapering but obtuse at the summit, on long filiform petioles; racemes slender, longer than the leaves; calyx lobes obovate, pale rose-color; berry rounded, compressed. — South Florida. — Shrub 1°-2° high. Leaves 1′-3′ long. Flowers and berries 1″-1½″ long.

3. PHYTOLACCA, Tourn. POKEWEED.

Calyx 3-bracted, 5-parted; the lobes petal-like, rounded. Stamens 5-25: anthers elliptical. Ovary compound. Styles 5-12, short, distinct, recurved at the apex, stigmatic within. Fruit a depressed globose berry, containing 5-12 one-seeded indehiscent carpels united in a circle. Embryo forming a ring around the central albumen. Cotyledons linear. — Erect branching herbs, with entire petioled leaves. Flowers in racemes opposite the leaves.

1. **P. decandra,** L. Smooth; stem very stout (2°-12° high); leaves ovate-lanceolate, acute; racemes many-flowered, as long as the leaves; flowers white, turning purplish; stamens, styles, and carpels 10. — Margins of fields and uncultivated ground. July-Sept. ♃ — Root large. Berry black.

ORDER 107. ILLECEBRACEÆ. (KNOTWORT FAMILY.)

Herbs with opposite entire leaves, dry scarious stipules, and small cymose or clustered flowers. — Calyx of 5 more or less united sepals. Stamens 2-5, inserted on the calyx, and often with bristle-like sterile ones interposed. Styles 2, separate or united. Fruit a 1-seeded utricle. Embryo circular, enclosing mealy albumen.

Synopsis.

1. PARONYCHIA. Sepals united at the base. Stamens inserted on the base of the sepals. Style long. Utricle included.
2. ANYCHIA. Sepals distinct. Stamens inserted on the base of the sepals. Style very short. Utricle partly exserted.
3. SIPHONYCHIA. Sepals united into a tube below the middle. Stamens inserted on the tube of the calyx. Style long.

1. PARONYCHIA, Tourn.

Sepals 5, united at the base, concave and mucronate or awned at the apex. Sterile stamens bristle-like or tooth-like, alternate with the 5 fertile ones and inserted with them on the base of the calyx. Style long, 2-cleft. Utricle included. Seed resupinate. Radicle superior or ascending. — Low herbs, with conspicuous silvery stipules, and minute flowers in loose or compact cymes.

1. **P. dichotoma,** Nutt. Smooth; stems slender, erect; leaves linear-subulate; those of the barren stems imbricated; cymes fastigiate, diffuse; sepals linear, 3-ribbed, slender-pointed. — Rocks on the mountains of North Carolina, and westward. July – Nov. ♃ — Stems 6′ – 12′ high.

2. **P. argyrocoma,** Nutt. Minutely pubescent; stems tufted, ascending; leaves linear, acute; cymes capitate, the flowers concealed by the large silvery stipules; sepals lanceolate, hairy, slender-pointed. — Mountains of Georgia and North Carolina. July – Sept. ♃ — Stems 6′ – 10′ high. Stipules nearly as long as the leaves.

3. **P. herniarioides,** Nutt. Rough-pubescent; stems prostrate, diffusely branched; leaves oval or oblong, mucronate; flowers axillary, solitary, sessile; sepals subulate, with a short and spreading point. — Dry sand ridges in the middle districts, Georgia to North Carolina. July – Oct. ① — Stems 4′ – 6′ long. Leaves 3″ – 4″ long.

4. **P. Baldwinii,** Chapm. Finely pubescent; stems prostrate, diffusely branched; branches alternate, one-sided, filiform; leaves lanceolate or ovate-lanceolate, acute, narrowed into a petiole; cymes diffuse, naked; sepals oblong, 3-ribbed, ciliate, short-pointed; utricle equalling or rather longer than the sepals; style 2-cleft to the middle. (Anychia, *Torr. & Gray.*) — Dry sandy soil, Florida and Georgia. July – Oct. ① and ② — Stems ½° – 1° long. Upper leaves sometimes alternate.

5. **P. riparia,** Chapm. Smooth or nearly so; perennial; stems several, spreading, branched; leaves ovate-lanceolate, acute; stipules very short; sepals smoothish; otherwise like the preceding. — Banks of Flint River, Georgia. — Stems 1½° – 3° long. Leaves ½′ long.

6. **P. Rugelii,** Shuttlw. Annual, pubescent; stem erect, successively forking; leaves oblanceolate, abruptly pointed, shorter than the internodes, the upper linear; stipules a fourth to a third as long as the leaves, soon 2 – 4-parted; cymes numerous, terminal, rather loosely flowered; calyx tube short, pubescent, the linear-lanceolate divisions conspicuously mucronate, white; style included. — Dry sandy soil, Florida, and westward. — Stems 1° high, at length diffuse.

2. ANYCHIA, Michx.

Sepals 5, distinct, slightly mucronate at the apex. Stamens 2 – 3, inserted on the base of the calyx. Style very short. Stigmas spreading. Utricle exserted. Seed erect. Radicle inferior. — An erect slender annual, with forking branches. Leaves oblong, obtuse, narrowed at the base. Flowers minute, solitary or clustered in the forks of the branches, greenish.

1. **A. dichotoma,** Michx. Pubescent; stem 6′ – 9′ high; leaves 3″ – 6″ long, linear-oblong, approximate, like the flowers, on the short erect branches. — Open ground in the upper districts.

Var. **capillacea,** Torr. Glabrous, taller; leaves larger and thinner, oblong, distant on the setaceous spreading branches. — Shady woods in the upper districts. June – July.

3. SIPHONYCHIA, Torr. & Gray.

Sepals 5, united to the middle, concave and petal-like above, obtuse or mucronate. Stamens inserted on the throat of the calyx. Style slender, 2-cleft. Utricle included. Seed resupinate. Radicle superior. — Erect or diffusely prostrate herbs. Cymes dense-flowered. Flowers white.

1. **S. Americana,** Torr. & Gray. Stems prostrate, diffuse, pubescent in lines; leaves lanceolate, narrowed at the base; the radical ones larger and crowded; flowers obovate, solitary in the forks of the stem, and clustered at the end of the branches; sepals rounded and incurved at the apex, the tube bristly with hooked hairs. — Sandy soil, Florida to South Carolina, and westward. June – Oct. ① or ② — Stems 1° – 2° long. Stipules small.

2. **S. diffusa,** Chapm. Pubescent; stems prostrate, diffusely branched; leaves lanceolate, obtuse; flowers in compact, rectangular terminal cymes; sepals linear, slightly concave and mucronate at the apex, the tube bristly with hooked hairs. — Dry sandy pine barrens, Florida. June — Oct. ① — Stems 1° long. Stipules conspicuous, on young plants half as long as the leaves, at length 2-parted. Cymes very numerous.

3. **S. erecta,** Chapm. Stems smooth, clustered, erect, mostly simple; leaves erect, linear; those of the barren stems imbricated; cyme compound, rectangular, compact; sepals lanceolate, smooth, acutish, or obscurely mucronate at the apex, the tube smooth and furrowed. — Sands along the west coast of Florida. June – Nov. ♃ — Root woody. Stems 6′ - 12′ high. Stipules half as long as the leaves.

ORDER 108. AMARANTACEÆ. (AMARANTH FAMILY.)

Chiefly herbs, with simple exstipulate leaves, and inconspicuous scarious-bracted flowers, which are commonly crowded in spikes or heads. — Sepals 3 – 5, free, or united at the base, imbricated in the bud. Stamens 3 – 5, hypogynous, opposite the sepals, free, or united below, often with sterile filaments interposed: anthers 1 – 2-celled, introrse. Ovary single, ovate, 1 – many-ovuled. Stigmas 1 – 5. Utricle closed or circumscissile. Embryo coiled into a ring around the central albumen.

Synopsis.

TRIBE I. **CELOSIEÆ.** Anthers 2-celled. Ovary many-ovuled.

1. CELOSIA. Stamens united at the base. Utricle circumscissile.

TRIBE II. **ACHYRANTHEÆ.** Anthers 2-celled. Ovary 1-ovuled. — Leaves alternate. Stamens free. Sterile filaments none.

* Utricle circumscissile.

2. AMARANTUS. Flowers monœcious. Sepals 3 – 5.

* * Utricle indehiscent.

3. EUXOLUS. Flowers all alike, monœcious, sessile. Sepals 3 – 5.
4. AMBLOGYNA. Flowers monœcious. Calyx of the staminate flower 3-sepalous, of the pistillate flower 5-parted, funnel-shaped.
5. SCLEROPUS. Flowers monœcious. Sepals 5. Stamens 3. Fruiting pedicels indurated and deciduous with the fruit.

6. **ACNIDA.** Flowers diœcious. Sepals of the staminate flower 5, of the pistillate none. Stamens 5.

TRIBE III. **GOMPHRENEÆ.** Anthers 1-celled. Ovary 1-ovuled. Leaves opposite. Stamens united below.

7. IRESINE. Calyx 5-sepalous. Stamens united into a short cup. Sterile filaments none.
8. ALTERNANTHERA. Calyx 5-sepalous. Stamens united into a cup. Sterile filaments tooth-like, entire.
9. TELANTHERA. Calyx 5-sepalous. Stamens united into a tube. Sterile filaments cleft or fimbriate at the apex.
10. FRŒLICHIA. Calyx 5-cleft. Stamens wholly united. Anthers sessile. Sterile filaments entire.

1. CELOSIA, L.

Flowers perfect, 3-bracted. Sepals 5. Stamens 5, united at the base into a cup. Sterile filaments none. Anthers 2-celled. Style short or elongated. Stigmas 2–3, recurved. Utricle many-seeded, circumscissile. — Smooth herbs or shrubs, with alternate petioled leaves, and glossy flowers crowded in axillary and terminal spikes or panicles.

1. **C. paniculata,** L. Stem shrubby, erect; leaves deltoid-ovate, acute, abruptly petioled; spikes cylindrical, simple or branched, mostly shorter than the leaves; sepals oblong, rigid, several times longer than the bracts; stigmas 3. — South Florida. — Leaves 2′ long. Seeds minute, lenticular, shining.

2. AMARANTUS, Tourn. AMARANTH.

Flowers polygamo-monœcious, 3-bracted. Sepals 3–5. Stamens 3–5, free. Sterile filaments none. Anthers oblong, 2-celled. Stigmas 2–3, slender, spreading. Utricle 1-seeded, ovate, 2–3-toothed at the apex, circumscissile, commonly included in the calyx. Radicle inferior. — Unsightly annual herbs, with erect or diffuse stems, alternate mostly petioled entire mucronate leaves, and greenish or purplish flowers, crowded in axillary and terminal spikes or clusters. Bracts longer than the sepals.

* *Flowers in small axillary clusters: sepals and stamens* 3.

1. **A. albus,** L. Stem erect, branching from the base, smooth; leaves small, long-petioled, oblong-obovate, very obtuse or emarginate, wavy at the margins; clusters shorter than the petioles; sepals awl-pointed, much shorter than the subulate spine-pointed spreading bracts, and half as long as the rugose utricle. — Cultivated grounds. May – Sept. — Stem 1° high. Leaves ½′–1′ long.

* * *Flowers* (*green*) *crowded in terminal and axillary spikes: sepals and stamens* 5: *leaves long-petioled.*

2. **A. chlorostachys,** Willd. Stem erect, furrowed, pubescent; leaves ovate or rhombic-ovate, obtuse, the veins beneath pubescent; spikes very numerous, forming a long leafy and more or less dense panicle; sepals lanceolate, acute, scarcely half as long as the subulate bracts, shorter than the rugose utricle. — Cultivated ground, common. August – Sept. — Stem 2°–4° high. Leaves 2′–4′ long, twice as long as the petiole.

3. **A. hybridus,** L. Smooth or nearly so; stem erect, branching; leaves thin, ovate or ovate-oblong, obtuse, the pale veins prominent beneath;

spikes numerous, panicled, the terminal one elongated, the lower axillary ones short and roundish; sepals oblong, acuminate, rather shorter than the subulate bracts, and equalling the slightly rugose utricle. — Cultivated ground. August – Sept. — Stem 2° – 3° high. Leaves 2′ – 5′ long.

4. **A. spinosus,** L. Smooth; stem stout, succulent, often purplish; leaves ovate or ovate-oblong, obtuse or emarginate, long-petioled, often blotched with purple, the axils spiny; terminal spike elongated, bending, the lower axillary ones short and roundish; sepals, bracts, and rugose utricle nearly equal. — Fields and waste places. July – Oct. — Stem 1° – 3° high

3. EUXOLUS, Raf.

Characters chiefly of Amarantus; but the somewhat fleshy utricle indehiscent, and the (green) sepals longer than the bracts.

1. **E. lividus,** Moquin. Stem erect, branched; leaves long-petioled, ovate, obtuse; spikes dense-flowered; the terminal one longest, with several shorter ones crowded near its base, the lowest axillary ones much shorter than the petiole; sepals 3, shorter than the roundish acute rugose utricle, and 3 times as long as the bracts. — Waste ground. July – Sept. ① — Stem 1° – 3° high. Leaves, with the petiole, 3′ – 6′ long.

2. **E. deflexus,** Raf. Stems decumbent, widely branched; leaves ovate or rhombic-lanceolate, obtuse; spikes mostly single, thick, the clusters oblong; utricle ovate, smooth; margins of the seed acute. — Waste ground. Introduced. — Stems 1° – $1\frac{1}{2}$° long. Leaves 1′ – $1\frac{1}{2}$′ long. Spikes 2′ – 3′ long.

3. **E. pumilus,** Raf. Stem low, somewhat fleshy; leaves small, mostly crowded near the end of the branches, ovate, obtuse, short-petioled; flowers in small axillary clusters; sepals 5, half as long as the ovate obscurely 5-ribbed utricle. — Sandy sea-shore, South Carolina, and northward. August – Sept.

4. AMBLOGYNA, Raf.

Flowers monœcious. Staminate flowers 3-sepalous, triandrous. Pistillate calyx round-funnel-shaped, 5-cleft, with spreading spatulate scarious lobes, enclosing the indehiscent utricle. Otherwise like Amarantus.

1. **A. polygonoides,** Raf. Stem slightly pubescent, branching; leaves small, rhombic-ovate or obovate; flowers crowded in axillary clusters; bracts subulate; calyx of the pistillate flowers twice as long as the bracts, with a spreading white border; utricle ovate, rugose above, 3-cleft at the apex. — South Florida. ① — Stem 1° – $1\frac{1}{2}$° long. Leaves $\frac{1}{2}$′ – 1′ long.

5. SCLEROPUS, Schrad.

Flowers monœcious, 3-bracted, triandrous. Calyx 5-sepalous. Utricle indehiscent. Staminate flowers solitary, sessile in the upper axils. Pistillate flowers clustered in the lower axils, on flattened pedicels, which become indurated and fall away with the mature fruit. Otherwise like Amarantus and Euxolus.

1. **S. crassipes,** Moquin. Smooth; stem erect, branching; leaves obovate, obtuse; clusters shorter than the petiole; sepals much longer than the strongly keeled bracts, spatulate, obtuse, enclosing the granular-roughened utricle. — South Florida. ① — Stem 1° - 2° high. Leaves 1′ long.

6. ACNIDA, Mitchell.

Flowers diœcious, 3-bracted. Calyx of the staminate flower 5-sepalous, of the pistillate none. Stamens 5, free. Anther cells united only in the middle. Stigmas 3 - 5, spreading. Utricle 3 - 5-angled. Seed obovate. — Tall glabrous marsh annuals, with alternate entire long-petioled leaves, and scarious flowers clustered in axillary and terminal spikes.

* *Utricle somewhat fleshy, indehiscent, longer than the bracts.*

1. **A. cannabina,** L. Stem branching above, 4° - 8° high; leaves lanceolate or ovate-lanceolate, acuminate, 3′ - 5′ long; spikes slender, loosely flowered; stigmas long, plumose; utricle ovate or obovate, acutely 3 - 5-angled, 1″ long; seed compressed. — Marshes along the coast, Georgia, and northward. Oct. - Nov.

2. **A. rusocarpa,** Michx. Stigmas shorter; utricle larger (1½″ - 2″ long) and more fleshy, with the angles obtuse and often rugulose; otherwise like the preceding, and same range.

* * *Utricle thin, equalling or shorter than the bracts, mostly dehiscent.*

3. **A. australis,** Gray. Stem very tall (6° - 20° or more high), branching above; leaves ovate-lanceolate, acuminate, 6′ - 12′ long, the margins undulate; fertile spikes numerous, short, densely flowered; utricle smooth and even, acutely 3-angled, equalling the bracts; seed compressed. — Marshes near the coast, Florida, and westward. Oct. - Nov.

4. **A. Floridana,** Watson. Stem slender, simple or sparingly branched, 2° - 4° high; leaves linear, or the lowest lanceolate, 2′ - 4′ long; spikes single, terminating the stem and branches, loosely flowered; utricle rugulose, shorter than the bracts; seed turgidly lenticular. — Sandy coast, Florida. Nov.

7. IRESINE, Browne.

Flowers perfect or diœcious, 3-bracted. Sepals 5. Stamens 5, united into a cup at the base. Sterile filaments none: anthers 1-celled, ovate. Style very short: stigmas 2 - 3, slender. Utricle roundish, 1-seeded, indehiscent, included in the calyx. Seed vertical, lenticular. Radicle ascending. — Chiefly herbs, with opposite petioled leaves, and scarious glossy flowers, disposed in single or panicled spikes or heads.

§ 1. PHILOXERUS. *Flowers perfect, crowded in axillary and terminal heads.*

1. **I. vermicularis,** Moquin. Smooth; stem much branched, prostrate or creeping; leaves club-shaped, fleshy, semi-terete; heads mostly sessile, ovate or globose, at length oblong or cylindrical, obtuse: flowers white; sepals obtuse, longer than bracts, the two exterior ones woolly at the base. — Sandy coast, South Florida. — Stems 1° - 2° long. Leaves ½′ - 1′ long. Heads 3″ - 8″ long, mostly terminal and solitary.

§ 2. Iresinastrum. *Flowers diœcious, disposed in loosely panicled spikes.*

2. **I. celosioides,** L. Stem erect, smooth; leaves ovate-lanceolate, acute or acuminate at each end; panicle oblong, nearly leafless; spikes oblong, lengthening, white, the pistillate woolly. — Dry soil, Florida, and northward. July - Sept. ① — Stem 2° - 3° high. Leaves 2′ - 4′ long. Panicle 8′ - 12′ long.

8. ALTERNANTHERA, Mart.

Flowers perfect or diœcious, 3-bracted. Sepals 5, smooth or villous. Stamens 5, united into a short cup at the base. Sterile filaments tooth-like: anthers 1-celled. Style short: stigma capitate or 2-lobed. Utricle indehiscent, 1-seeded. Seed vertical, lenticular. Radicle ascending. — Herbs. Leaves opposite. Flowers capitate.

1. **A. Achyrantha,** R. Br. Stems forking, pubescent; leaves smoothish, oval or obovate, narrowed into a petiole; heads dense, oval, white; sepals lanceolate, spine-pointed, woolly with barbed hairs on the back, the two inner ones much smaller; sterile filaments subulate from a dilated and obscurely denticulate base, as long as the fertile ones. — Along roads and places much trodden, Florida to South Carolina. June - Oct. ♃ — Stem 6′ - 12′ long. Leaves 1′ long.

9. TELANTHERA, R. Brown.

Flowers perfect, 3-bracted. Sepals 5, erect. Stamens 5, united into a tube below the middle. Sterile filaments elongated, flattened, fimbriate at the apex: anthers 1-celled, oblong. Style short: stigma capitate. Utricle indehiscent, 1-seeded, included in the calyx. Seed vertical. Radicle ascending. — Herbs or shrubs, with opposite leaves. Flowers capitate.

* *Calyx sessile, the 3 exterior sepals longer: heads sessile or nearly so.*

1. **T. polygonoides,** Moquin. Stem erect or prostrate, pubescent; leaves oblong-obovate, hairy; heads sessile, roundish, single or 2 - 3 together, axillary and terminal; sepals thin, ovate-lanceolate, twice as long as the bracts, the outer ones 3-nerved, woolly at the base; sterile filaments as long as the fertile ones, 3 - 4-cleft at the apex. — On the coast of South Carolina, *Moquin.*

2. **T. maritima,** Moquin. Smooth and fleshy; stem prostrate, branching, angled; leaves wedge-obovate, very obtuse, mucronate; heads roundish or oblong, axillary and terminal, dull straw-color; flowers crowded, 3-angled; sepals smooth, rigid, ovate, acuminate, 5-ribbed, with the margins membranaceous, one third longer than the ovate keeled bracts; sterile filaments longer than the fertile ones, 4 - 6-cleft at the apex. — South Florida. — Leaves 1′ - 2′ long. Heads 4″ - 6″ long.

* * *Calyx raised on a short 5-angled pedicel, cylindrical; the sepals nearly equal, hairy: heads long-peduncled.* — Mogiphanes.

3. **T. Floridana,** Chapm. Shrubby; stem slender, elongated, forking, remotely jointed; sparsely pubescent, like the distant oblong or obovate leaves; peduncles terminal and in the forks, 4 - 6 times as long as the leaves; heads white, ovate; sepals acute, 3 - 5-nerved, hairy, longer than the ovate

acute bracts; sterile filaments longer than the fertile, 5-6-cleft; utricle crowned with a narrow toothed margin. — South Florida, along the coast. — Stem 2°-4° long. Leaves 1′ long.

4. **T. Brasiliana,** Moquin. Herbaceous, rough-hairy; the young leaves and branchlets hoary; stem erect, forking; leaves thin, ovate-lanceolate, acuminate, tapering into a short petiole, longer than the internodes, rather shorter than the slender peduncles; heads and flowers as in No. 3; utricle crowned with a narrow entire margin. — South Florida. — Stem apparently tall. Leaves 2′-4′ long.

10. FRŒLICHIA, Mœnch.

Flowers perfect, 3-bracted. Calyx tubular, 5-cleft, indurated and spiny-crested in fruit. Stamens 5, united into a long tube. Sterile filaments entire. Anthers sessile. Stigma capitate or many-cleft. Utricle indehiscent, 1-seeded, included in the calyx. Seed vertical. Radicle ascending. — Woolly or hairy annuals. Leaves opposite. Spikes opposite, and terminating the naked peduncle-like summit of the stem.

1. **F. Floridana,** Moquin. White-tomentose or woolly; stem erect, simple or branched; leaves linear to oblong; spikes ovate or oblong, lengthening with age; bracts mostly blackish, shorter than the calyx; style short; stigma capitate; fruiting calyx round-ovate, compressed, toothed along the margins, and minutely tubercled at the base. — Dry sandy soil, Georgia, Florida, and westward. July-Sept. — Stem ½°-3° high. Spikes solitary.

ORDER 109. CHENOPODIACEÆ. (GOOSEFOOT FAMILY.)

Unsightly herbs, with exstipulate leaves, inconspicuous flowers, and the characters mostly of the preceding family; but the green calyx often becoming succulent in fruit, 5 (rarely 1-2) stamens opposite the sepals, a solitary ovary forming an achenium or utricle in fruit, two short and spreading styles, a horizontal or vertical lenticular seed, and the embryo forming a ring around the albumen, or spirally coiled, with little or no albumen.

Synopsis.

TRIBE I. **CYCLOLOBEÆ.** Embryo curved like a ring around the albumen.

1. CHENOPODIUM. Calyx 3-5-parted, the lobes commonly keeled in fruit. Seed horizontal, rarely vertical.
2. ATRIPLEX. Flowers monœcious. Calyx of the sterile flowers 5-parted, of the fertile flower none. Ovary enclosed in a pair of separate at length coriaceous bracts. Radicle inferior.
3. OBIONE. Bracts of the fertile flower united. Radicle superior.
4. SALICORNIA. Flowers 3 together, lodged in excavations of the thickened joints of the leafless stem.

TRIBE II. **SPIROLOBEÆ.** Embryo spirally coiled, with little or no albumen. Seed horizontal.

5. SUÆDA. Calyx 5-parted, not keeled. Leaves terete, fleshy.
6. SALSOLA. Calyx at length transversely winged. Leaves spiny.

1. CHENOPODIUM, L. PIGWEED, GOOSEFOOT.

Calyx 5- (rarely 3–4-) parted, bractless, the lobes mostly keeled. Stamens 5, the filaments filiform. Styles 2–3, distinct, or united at the base. Utricle depressed, enclosed in the globose or 5-angled calyx. Seed horizontal (rarely vertical), lenticular. Embryo forming a more or less perfect ring around the copious mealy albumen. — Glandular or powdery-coated herbs, with alternate leaves, and clusters of small greenish flowers disposed in panicled spikes.

* *Annuals.*

1. **C. Boscianum,** Moquin. Stem erect, with slender branches; leaves oblong to lanceolate-linear, entire, or the lower somewhat toothed, more or less mealy and whitened beneath; spikes very slender; clusters few-flowered; seed slightly roughened, shining, enclosed in the acute-angled calyx. — Waste places, North Carolina, and westward. — Stem slender, 2° high. Leaves 1′–2′ long.

2. **C. album,** L. Stem erect, branched; leaves rhombic-ovate, toothed, the upper lanceolate and entire; spikes panicled; seed enclosed in the 5-angled calyx, smooth and shining. — Varies (C. viride, *L.*) with nearly entire and less mealy leaves, and the larger clusters more scattered. — Cultivated grounds. July–Sept. — Stem 2°–6° high. Petioles long and slender.

3. **C. murale,** L. Stem ascending, branched; leaves long-petioled, ovate-rhombic, acute, unequally and sharply toothed, bright green on both sides; spikes slender, spreading, corymbose, scarcely exceeding the leaves; seed dull, nearly enclosed in the slightly angled calyx. — Waste places. — Stem 6′–18′ high.

4. **C. Botrys,** L. Stem erect, branched; leaves oblong, somewhat pinnatifid-lobed, with the lobes obtuse, glandular-pubescent, the upper minute; racemes numerous, axillary, spreading, cymose; seeds with rounded margins, not wholly included in the open and even calyx. — Waste places. — Plant aromatic, 6′–12′ high.

* * *Perennial.*

5. **C. Anthelminticum,** L. (WORMSEED.) Stem stout, erect, branching; leaves oblong or lanceolate, acute at each end, sharply toothed; flowers in narrow panicles terminating the branches; seeds with obtuse margins, smooth and shining, included in the even calyx. — Waste grounds. — Stem 2°–3° high.

2. ATRIPLEX, L. ORACHE.

Flowers monœcious or diœcious, either similar to those of Chenopodium, or the fertile flower destitute of a calyx, and enclosed in two ovate or rhombic separate or partially united bracts. Seed vertical, lenticular. Embryo forming a ring around the copious mealy albumen. Radicle inferior. — Herbs, commonly coated with scurfy or silvery scales. Leaves alternate or opposite, oftener hastate or angled. Flowers in dense spikes.

1. **A. hastata,** L. Stem angled, diffusely branched; leaves petioled, commonly nearly opposite, hastate or triangular, somewhat toothed, and, like

the branches, more or less scurfy; fruiting bracts triangular-ovate or rhomboidal, entire or toothed below, smooth or muricate within. — Sea-shore, South Carolina (*Elliott*). June – Sept. — Stems 1° – 2° long.

3. OBIONE, Gærtn.

Chiefly as Atriplex, both in character and habit; but the two indurated bracts more or less united, often toothed on the edges and crested on the sides, and the radical superior.

1. **O. arenaria,** Moquin. Plant coated with silvery scales; stem branching from the base, ascending; lowest leaves opposite, obovate, entire, petioled, the others alternate, nearly sessile, lanceolate or oblong, acute, wavy and slightly toothed; sterile flowers in close terminal spikes; the fertile in axillary clusters; bracts 3-toothed at the summit, and with two mostly toothed knobs at the sides. — Drifting sands along the coast. July – Sept. ① — Stem 1° – 2° high. Leaves 1′ – 1½′ long.

2. **O. cristata,** Moquin. Plant scurfy, green; stems diffusely branched; leaves oblong, mucronate, petioled, denticulate, green above, paler beneath; bracts roundish, acute, somewhat spiny-toothed on the margins, and with 2 – 4 roundish knobs at the sides. — Sandy coast, South Florida. — Stem 1° – 1½° high. Leaves ½′ – 1′ long. Flowers clustered.

4. SALICORNIA, Tourn. Glasswort.

Flowers perfect, lodged in excavations of the thickened upper joints of the stem, spiked; calyx thin, with a denticulate border, at length spongy, and surrounded at the apex by a circular wing. Stamens 1 – 2. Styles united below. Utricle included in the calyx. Embryo coiled, or bent into a ring. — Smooth and succulent saline plants, with jointed leafless stems. Flowers three together; the lateral ones sometimes sterile, minute.

1. **S. herbacea,** L. Annual; stem erect, much branched; the joints thickened upward, obtusely 2-toothed at the apex; spikes long, tapering to the summit. — Salt marshes along the coast, Georgia, and northward. August. — Stem 6′ – 12′ high.

2. **S. mucronata,** Bigel. Annual; stem erect, branching, 1° high, the joints 2-toothed at the apex; spikes rather short and thick; seed round-oval. — Coast of North Carolina, and northward. Sept.

3. **S. ambigua,** Michx. Stem shrubby, prostrate or creeping; the branches herbaceous, erect; joints truncate, dilated upward, slightly 2-toothed; spikes cylindrical, obtuse, the uppermost approximate, sessile, the lateral ones peduncled. — Sandy marshes along the coast. August. — Stem 2° – 3° long, the branches 4′ – 6′ high.

5. SUÆDA, Forskal.

Flowers perfect, bracted. Calyx 5-parted, fleshy, inflated and berry-like in fruit. Stamens 5. Stigmas 2 – 3, spreading. Utricle depressed, enclosed in the calyx. Seed horizontal, lenticular. Embryo flat-spiral, dividing the scanty albumen into 2 portions. — Smooth saline plants, with fleshy terete alternate leaves, and axillary clustered flowers.

1. **S. linearis,** Moquin. Annual; stem diffusely much branched; leaves linear, acute; calyx lobes obtuse, keeled; stamens exserted. — Low sandy places along the coast. Sept. — Stem 1° 3° high. Leaves 1′-2′ long. Flowers minute.

6. SALSOLA, L. SALTWORT.

Flowers perfect, 2-bracted. Calyx 5-parted, the lobes at length transversely winged. Stamens 5, slightly united at the base. Style slender: stigmas 2. Utricle flattened at the apex, enclosed in the persistent calyx. Embryo conical-spiral. Albumen none. — Saline plants, with alternate and fleshy leaves, and axillary flowers.

1. **S. Kali,** L. Smooth; stem spreading, ascending; leaves subulate, spine-pointed like the ovate bracts; flowers solitary; calyx lobes connivent, with the dilated, membranaceous wing rose-colored — Sandy coast, Georgia, and northward. August. ① — Stem 1° - 1½° high.

ORDER 110. POLYGONACEÆ. (BUCKWHEAT FAMILY.)

Herbs, shrubs, or (tropical) trees, with simple mostly alternate and stipulate leaves, and perfect or diœcious flowers. — Calyx 3-6-cleft, or 3-6-sepalous, persistent. Stamens 4-12, inserted on the base of the calyx: anthers 2-celled. Ovary single, 1-celled, with the solitary orthotropous ovule erect from the base of the cell. Styles 2-3, distinct or partly united. Fruit (achenium) lenticular or 3-angled, rarely ovoid. Embryo mostly on the outside of mealy albumen. Radicle pointing upward. — Stipules sheathing, annular, or wanting.

Synopsis.

SUBORDER I. POLYGONEÆ. Involucre none. Calyx 5-6-cleft, or 5-6-sepalous. Stamens 4-9 (mostly 5-8). Ovules sessile. Embryo curved on the outside of the albumen, rarely straight in its centre. Stipules sheathing.

* Calyx 5-6-sepalous, the inner sepals erect, mostly enlarged in fruit.

1. **RUMEX.** Calyx green, often grain-bearing. Stigmas many-cleft.
2. **POLYGONELLA.** Calyx corolla-like. Stigma entire.

* * Calyx 5-sepalous, the sepals all erect, unchanged in fruit, free from the achenium.

3. **POLYGONUM.** Sepals entire. Embryo curved on the outside of the albumen.
4. **THYSANELLA.** Inner sepals fimbriate. Embryo straight at the side of the albumen.

* * * Calyx 5-parted, the tube enlarged and fleshy in fruit, and partly united with the achenium.

5. **COCCOLOBA.** Achenium ovoid or globose. Trees.

SUBORDER II. BRUNNICHIEÆ. Involucre none. Calyx 5-parted, the tube enlarged and indurated in fruit. Stamens 8. Ovule borne on a slender stalk. Embryo at the margin of the albumen. Stipules none.

6. **BRUNNICHIA.** Pedicels winged in fruit. Climbing shrubs.

Suborder III. ERIOGONEÆ. Flowers surrounded by an involucre. Calyx 6-parted. Stamens 9. Ovule sessile. Embryo included in scarce albumen. Stipules none.

7. **ERIOGONUM.** **Involucre 5-toothed. Woolly or silky herbs.**

1. RUMEX, L. Dock.

Flowers perfect or diœcious. Calyx herbaceous, 6-parted, the 3 outer lobes spreading or recurved, the inner ones (valves) mostly enlarged in fruit, and enclosing the 3-angled achenium, often bearing grain-like prominences on the outside. Stamens 6: anthers erect. Styles 3: stigmas many-cleft. Achenium 3-angled. Embryo curved on the outside of the albumen. — Herbs, with alternate leaves, smooth truncated sheaths, and small green flowers in racemed or panicled clusters.

* *Flowers perfect or polygamous.*

+ *Valves entire.*

1. **R. crispus,** L. Smooth; leaves lanceolate, wavy-crisped, acute at both ends, or the lowest truncate or slightly cordate at the base, and long-petioled, the uppermost linear; panicle leafy at the base; whorls crowded in fruit; valves broadly cordate, obtuse, one or all grain-bearing. — Waste ground around dwellings. June - July. ♃ — Stem 2° - 3° high. Lowest leaves 1° long.

2. **R. verticillatus,** L. Smooth; lowest leaves oblong, obtuse or cordate at the base, flat, the others lanceolate, acute at each end; panicle naked, loose-flowered; pedicels slender, thickened upward, reflexed in fruit; valves ovate, obtuse, rugose-veined, each bearing a large grain, half as wide as the valve. — Swamps and ditches, Florida, and northward. May - June. ♃ — Stem 1° - 2° high. Lowest leaves 1° - 1½° long.

3. **R. Floridanus,** Meisner. Smooth; stem stout, branching; leaves lanceolate, acute at each end; panicle naked, dense-flowered; pedicels about twice as long as the valves, thickened upward, reflexed in fruit; valves deltoid-ovate, obtusely pointed, each bearing a narrow grain, which is much narrower than the reticulate valve. — Deep river swamps, Florida, and westward. June. ♃ — Stem 2° - 3° high. Leaves ½° - 1½° long.

4. **R. sanguineus,** L. Lowest leaves oblong, cordate, acute or obtuse, the upper lanceolate, wavy-margined; panicle leafless; lower whorls distant; valves oblong, longer than the pedicel, one only prominently grain-bearing. — Waste ground. Introduced. June - July. ♃ — Stem 2° - 3° high. Lowest leaves large, variegated with red veins.

+ + *Valves toothed or bristly on the margins.*

5. **R. obtusifolius,** L. Stem roughish; lowest leaves large, ovate-oblong, cordate, mostly obtuse, the uppermost lanceolate, acute at each end; panicle large, leafy below; lowest whorls scattered, the upper somewhat crowded; valves triangular-ovate, toothed near the base, nearly as long as the slender recurved pedicels, one or all more or less prominently grain-bearing. — Waste ground. Introduced. June - Aug. ♃ — Stem 2° - 3° high. Lowest leaves 1° - 1½° long.

6. **R. pulcher,** L. Branches rigid, spreading; lowest leaves cordate-oblong, somewhat fiddle shaped, the upper lanceolate, acute; whorls remote; valves longer than the thick pedicels, ovate-oblong, rigid, strongly toothed, more or less prominently grain-bearing. — Around Charleston (*Elliott*). Introduced. June – July.

7. **R. persicarioides,** L. Pubescent; stem low, diffusely branched; leaves lanceolate, wavy-margined, the lower ones somewhat cordate or hastate at the base, the upper linear; whorls compactly crowded in leafy spikes; valves small, bristly on the margins, nearly covered by the large grain. — Coast of North Carolina, and northward. August – Sept. ① — Stems 6′ – 12′ high. Spikes yellowish.

* * *Flowers diœcious. Herbs with sour juice.*

+ *Calyx not enlarged in fruit.*

8. **R. Acetosella,** L. Root creeping; stems low, erect or ascending; leaves oblong, lanceolate, or linear, entire or hastate-lobed; panicle slender, leafless; whorls scattered, few-flowered; valves ovate, grainless, appressed to the achenium. — Old fields and sterile soil, common. June – July. ♃ — Stems 6′ – 12′ long. Leaves and flowers small

+ + *Inner calyx lobes dilated in fruit.*

9. **R. hastatulus,** Baldw. Stems clustered, erect; leaves glaucous lanceolate or linear, or the lowest oblong, entire or hastate-lobed; whorls few flowered, scattered, or the upper ones crowded; valves round-cordate, entire membranaceous, reticulated, red or white, grainless. — Dry sands along the coast and in the middle districts, Florida to South Carolina. May – June. — Stem 1° – 1½° high. Leaves 1′ – 2′ long, the upper ones mostly entire.

2. POLYGONELLA, Michx.

Flowers perfect or diœciously polygamous. Calyx corolla-like, deeply 5-parted or 5-sepalous; the three inner sepals mostly enlarging and enclosing the 3-angled achenium. Stamens 8: anthers roundish. Stigmas 3, capitate. Embryo straight, or nearly so, in the centre, or at one side of the mealy albumen. — Smooth and commonly glaucous herbs or shrubs, with slender branching stems, small alternate leaves, and small flowers in slender racemes. — Sheaths smooth. Bracts imbricated, top-shaped, mostly 1-flowered. Pedicels nodding in fruit.

§ 1. EUPOLYGONELLA.—*Filaments all alike, subulate: stigmas nearly sessile: flowers diœciously polygamous: embryo in the centre of the albumen.*

1. **P. parvifolia,** Michx. Shrubby and diffusely branched at the base; leaves wedge-shaped or linear-spatulate, vertical; racemes short, corymbose-panicled; bracts truncate; flowers white, yellowish, or red; exterior sepals recurved; valves orbicular, equal, longer than the ovate achenium. — Dry sandy soil, near the coast. August – Sept. — Stem 1° – 2° high. Leaves ½′ – 1′ long. Racemes ½′ – 1′ long.

2. **P. gracilis,** Meisner. Annual; stem tall and slender, paniculately branched above; leaves remote, wedge-oblong; racemes slender, panicled;

flowers white or pale rose-color, the fertile greenish; sepals all erect; valves oval or elliptical, unequal, shorter than the ovate-lanceolate acuminate achenium. — Dry pine barrens, Florida to South Carolina. Oct.–Nov. — Stem 2°–5° high. Leaves 1′ long. Racemes linear, 1′–3′ long.

3. **P. brachystachya,** Meisner. Shrubby; branches slender; leaves linear, tapering from the obtuse apex to the base; panicle compound, leafy; racemes short, oblong, nearly sessile; exterior sepals keeled, reflexed; valves oval, strongly 1-nerved, longer than the rhomboidal achenium, nearly equal. — South Florida. — Branches straight, 1°–1½° long. Leaves 3″–5″ long. Racemes ½′ long.

4. **P. ciliata,** Meisner. Stem herbaceous, nearly simple; leaves subulate, very acute; sheaths fringed at the throat with few long bristles; panicle simple, short, leafy at the base; spikes nearly sessile, filiform; bracts minute, pointed; pedicels very short; sepals oblong, obtuse, spreading longer than the achenium. — South Florida. — Stem 2° high, slender. Leaves 1′–1½′ long.

§ 2. GONOPYRUM.—*Filaments unlike, the 3 interior dilated at the base: styles manifest: flowers perfect: embryo at one side of the albumen.*

5. **P. Meisneriana,** Shuttlw. Stem shrubby, much branched; leaves small, filiform, obtuse; racemes long, forming small terminal panicles; bracts loose, oblique, with the points spreading; exterior sepals recurved; valves equal, roundish, longer than the ovate acuminate achenium; three interior filaments inversely sagittate below the middle. — Middle districts of Georgia and Alabama. — Stem 1°–2° high. Leaves numerous, 2″–3″ long. Fruiting spikes rigid, 1′–2′ long. Valves largest of all.

6. **P. articulata,** Meisner. Annual; stem much branched, slender; leaves narrowly linear, obtuse; racemes numerous, erect, slender; bracts truncate; flowers bright rose-color; sepals oval or roundish, nearly equal, unchanged in fruit; interior filaments rhombic-ovate at the base. — Dry sandy soil. Georgia, and northward. August. — Stem 6′–12′ high. Leaves 4′–8′ long. Racemes 1′–3′ long.

3. POLYGONUM, L. KNOTWEED.

Flowers perfect. Calyx 5- (rarely 4-) parted, corolla-like, the lobes nearly equal, erect and unchanged in fruit. Stamens 3–9: anthers roundish. Styles 2–3, distinct or partly united: stigmas entire. Achenium 3-angled or lenticular, enclosed in the persistent calyx. Embryo curved on the outside of the albumen. Radicle slender. — Herbs, with alternate, simple leaves, and sheathing stipules. Flowers commonly white or rose-color, variously disposed.

§ 1. AMBLYOGONON.—*Flowers in closely-bracted spikes: stamens 7: style 2-cleft: achenium lenticular: cotyledons incumbent: albumen mealy.*

1. **P. orientale,** L. Hairy; stem tall, branching; leaves ovate, acuminate, petioled; sheaths loose, salver-form; spikes panicled, cylindrical, dense, nodding; bracts ovate; flowers large, bright rose-color. — Around dwellings,

escaped from cultivation. June - Sept. — Stem 3° - 5° high. Spikes 2′ - 3′ long.

§ 2. Persicaria.—*Flowers in closely-bracted spikes: stamens* 4 - 8: *styles* 2 - 3, *or* 2 - 3-*cleft: achenium* 3-*angled or lenticular: cotyledons accumbent: albumen horny: sheaths cylindrical, truncate.*

* *Sheaths naked: style* 2-*cleft or* 2-*parted: achenium lenticular.*

2. **P. incarnatum,** Ell. Stem smooth below, the summit of the branches, peduncles, and calyx sprinkled with glandular dots; leaves lanceolate, long-acuminate, petioled; spikes racemed, linear, nodding; bracts longer than the pedicels; flowers small, flesh-color; stamens 6; style 2-parted; achenium ovate, with the sides concave. — Ponds, ditches, etc., South Carolina, and westward. July - Oct. ① — Stem 2° - 3° high. Leaves 6′ - 8 long. Spikes 1′ - 2′ long.

3. **P. densiflorum,** Meisner. Stem stout, smooth, branching above; leaves lanceolate or oblong-lanceolate, acuminate; spikes racemed or somewhat panicled, linear, erect, dense-flowered, the peduncles minutely glandular; bracts shorter than the pedicels; stamens mostly 6; style 2-cleft; achenium round-ovate, black and shining, with the sides convex. — Muddy banks, Florida, and westward. Sept. - Oct. ① — Stem 3° - 4° high. Leaves 6′ - 10′ long. Spikes 2′ - 4′ long. Flowers white.

4. **P. Muhlenbergii,** Watson. Stem stout, pubescent above; leaves 3′ - 6′ long, broadly lanceolate, acuminate; spikes erect, racemose or in pairs, linear-cylindrical, close-flowered, 1′ - 2′ long; flowers large, rose-colored; achenia compressed. — Muddy banks, Florida, and northward.

5. **P. Pennsylvanicum,** L. Stem smooth below, the branches and peduncles glandular; leaves short-petioled, lanceolate; spikes erect, oblong, obtuse, close-flowered; flowers large, rose-color; stamens mostly 8; style 2-cleft; achenium orbicular, with the sides concave. — Wet places. July - Sept. ① — Stem 1° - 3° high. Leaves 2′ - 4′ long. Spikes 1′ - 1½′ long.

* * *Sheaths fringed with bristly hairs: achenia* 3-*angled, or* (*in Nos.* 6 *and* 8) *sometimes lenticular: stamens mostly* 8.

6. **P. Persicaria,** L. Stem smooth, branching from the base, erect or diffuse; leaves lanceolate or oblong, sheaths short, nearly smooth, fringed with a few short bristles; spikes short, oblong; flowers rose-color; stamens 6 - 7; achenium lenticular or 3-angled, smooth and shining. — Waste places Introduced. July. ① — Stem 1° - 1½° high. Leaves 2′ - 4′ long, often with a dark triangular spot in the middle. Spikes ½′ - 1′ long.

7. **P. acre,** Kunth. Stem slender, smooth, creeping at the base; leaves lanceolate, and, like the white calyx, dotted with pellucid glands; sheaths smoothish, long-fringed at the throat; spikes 1 - 3, filiform, loose-flowered; stamens 8; style 3-parted; achenium 3-angled. (P. punctatum, *Ell.*) — Ditches and margins of ponds, Florida, and northward. July - Sept. ♃ — Stem 1° - 3° long. Leaves 2′ - 4′ long, very acrid. Spikes 2′ - 3′ long.

8. **P. Hydropiper,** L. (Common Smartweed.) Annual, smooth; leaves lanceolate, punctate, acrid; spikes slender, interrupted, nodding

flowers greenish; stamens 6; style 2 – 3-parted; achenium flat or triangular. — Roadsides in the upper districts. — Stem 1° – 2° high.

9. **P. hydropiperoides,** Michx. Stem slender, smooth, ascending from a floating or creeping base; leaves linear or lanceolate, scabrous; sheaths hispid, long-fringed; spikes 2 – 3, linear, rather close-flowered; calyx pale rose color, glandless; stamens 8; style 3-cleft; achenium 3-angled. — Ditches and muddy banks. July – Sept. ♃ — Stem 2° – 3° long. Leaves 2′ – 4′ long, not acrid. Spikes 1′ – 2′ long.

10. **P. setaceum,** Baldw. Stem erect, sparingly branched, smooth below, the upper portion, like the peduncles and lanceolate glandless leaves, rough with appressed hairs; stipules appressed, hirsute, copiously fringed with long bristles; spikes filiform, by pairs, loose-flowered; flowers white, glandless; stamens 8; style 3-cleft; achenium 3-angled. — Low ground, Georgia and Florida. July – Sept. ♃ — Stem 2° – 3° high. Leaves 3′ – 5′ long. Spikes 1′ – 2′ long.

11. **P. hirsutum,** Walt. Stem erect, densely hirsute with spreading fulvous hairs; leaves lanceolate, nearly sessile, rounded at the base, hirsute, particularly on the veins and margins; sheaths hirsute, copiously fringed; spikes 2 – 3, linear, erect, rather close-flowered; peduncles smooth above; bracts naked; flowers white, glandless; stamens 8; achenium 3-angled. — Pine barren ponds, Florida to North Carolina. July – Sept. ♃ — Stem 2° – 3° high. Leaves 2′ – 3′ long. Spikes 1′ long.

§ 3. AVICULARIA.—*Flowers axillary, single or 2 – 3 together: stamens 8, rarely fewer: stigmas 3, nearly sessile: achenium 3-angled: cotyledons incumbent: albumen horny: sheaths scarious, 2 – 3-parted, lacerated: leaves small.*

12. **P. aviculare,** L. Stem prostrate, diffuse, short-jointed; leaves sessile (½′ long), oblong-linear or lanceolate, obtuse, longer than the 3-cleft sheaths; flowers clustered, nearly sessile, greenish white, longer than the dull achenium; stamens mostly 5. — Waste places and along roads, common. — Var. ERECTUM. (P. erectum, *L.*) Stem stouter, erect or ascending, leaves larger (1′ – 1½′ long), oblong. — With the preceding. — Var. LITTORALE. (P. maritimum, *L.*) Stem 1° – 2° long, prostrate, rigid, short-jointed; leaves small (4″ – 6″), oblong-linear, glaucous; the uppermost imbricated and scarcely longer than the conspicuous silvery sheaths; calyx reddish white, shorter than the smooth achenium. — Seacoast sands, Georgia, and northward.

13. **P. tenue,** Michx. Smooth; stem erect, branched, sharply angled, slender; leaves scattered, linear, acute; sheaths small, fringed; flowers mostly solitary, greenish white; achenium smooth and shining. — Dry rocks in the upper districts. July – Sept. ① — Stem 6′ – 8′ high. Leaves 6″ – 12″ long.

§ 4. TOVARIA.—*Flowers scattered in a long and slender spike: calyx 4-parted: stamens 5, included: styles 2, exserted, persistent: achenium lenticular: cotyledons accumbent.*

14. **P. Virginianum,** L. Stem erect, smooth below; the upper portion, like the leaves and spikes, more or less hairy; leaves large, ovate or ovate-lanceolate, acute at each end; sheaths cylindrical, hairy, fringed; flowers

greenish, curved; styles at length hooked at the apex. — Dry rich soil. August – Sept. ♃ — Plant 2° – 4° high. Leaves 3′ – 5′ long, 1½′ – 2½′ wide. Spike 6′ – 12′ long.

§ 5. ECHINOCAULON.—*Flowers in terminal clusters: calyx* 4 – 5-*parted: stamens* 6 *or* 8: *styles* 2 – 3: *achenium lenticular or 3-angled: cotyledons accumbent. — Stems weak, branching, armed on the angles, petioles, etc. with recurved prickles.*

15. **P. arifolium,** L. Leaves hastate, acuminate, membranaceous, minutely dotted and hairy, long-petioled, the lobes acute; peduncles rather short, bristly; flowers white, somewhat spiked; stamens 6; styles 2; achenium lenticular. — Rice fields and wet places, South Carolina, and northward. June – Oct. ① — Stems 2° – 3° long. Leaves 3′ – 4′ long.

16. **P. sagittatum,** L. Leaves small, sagittate, acute, short-petioled, smooth; peduncles elongated, smooth; flowers white, capitate; stamens 8; styles 3; achenium 3-angled. — Wet places. June – Oct. ① — Stem 1° – 3° long. Leaves 1′ – 2′ long.

§ 6. TINIARIA.—*Flowers in axillary clusters or racemes: calyx greenish white,* 5-*parted, the outer lobes keeled or winged on the back: stamens* 8: *styles* 3, *very short: achenium 3-angled: cotyledons accumbent. — Annuals, with twining stems and cordate leaves.*

17. **P. Convolvulus,** L. Stem roughish, when small erect; leaves long-petioled, sagittate-cordate, acuminate; sheaths naked; flowers in axillary clusters, or in long interrupted leafless racemes; fruiting calyx ovate, closely investing the dull black achenium, the outer lobes keeled. — Cultivated ground. Introduced. July – Sept. — Stems 1° – 3° long.

18. **P. cilinode,** Michx. Minutely pubescent; leaves ovate, acuminate; sheaths bearded at the base; flowers in loose simple axillary and panicled racemes; fruiting calyx nearly including the smooth and shining achenium, the outer lobes slightly keeled. — Dry rocks on the mountains of North Carolina, and northward. July – Sept. — Stem 3° – 9° long.

19. **P. dumetorum,** L. Smooth; leaves ovate, acuminate, long-petioled; sheaths naked; flowers in long axillary more or less leafy racemes, fruiting calyx somewhat spatulate, emarginate, much longer than the smooth and shining achenium, the outer lobes winged, and decurrent on the pedicel. — Low margins of fields and thickets. June – Sept. — Stem 6° – 12° long.

4. THYSANELLA, Gray.

Flowers polygamous. Calyx corolla-like, deeply 5-parted, unchanged in fruit; lobes erect, unequal; the 2 outer ones cordate at the base; the inner smaller, pectinate-fimbriate. Stamens 8. Styles 3. Achenium ovate, 3 angled, nearly included in the persistent calyx. Cotyledons on the outside of the albumen. — An erect smooth and branching annual, with long linear acute leaves, truncate cylindrical sheaths, fringed with long bristles, and white or rose-colored flowers in closely bracted spikes.

1. **T. fimbriata,** Gray. (Polygonum fimbriatum, *Ell.*) — Dry pine barrens, Georgia and Florida. Sept. – Oct. — Stem branching above, 1° – 2° high. Leaves 1′ – 2′ long.

5. COCCOLOBA, Jacq.

Flowers perfect. Calyx herbaceous, 5-parted, the tube enlarged and more or less fleshy in fruit. Stamens 8. Filaments subulate. Styles 3: stigmas entire. Achenium nearly globose, included in and partly united with the persistent calyx. Embryo straight in the axis of mealy albumen. — Trees or shrubs, with alternate leaves, truncate sheaths, and small greenish flowers in axillary and terminal racemes.

1. **C. uvifera,** Jacq. (SEA GRAPE.) Smooth; leaves short-petioled, coriaceous, orbicular-cordate or reniform; racemes terminal, rigid, erect; pedicels single; stamens included; achenium ovate, acute. — South Florida, along the coast. — A small tree, with rigid spreading branches. Leaves 3′ – 5′ wide, very thick. Racemes 6′ long.

2. **C. Floridana,** Meisner Smooth; leaves petioled, somewhat coriaceous, elliptical, obtuse at each end; racemes slender, terminal and on short lateral branches, recurved; pedicels 2 – 3 together, about the length of the calyx; stamens exserted; achenium ovoid, obtuse. — South Florida. — A small tree. Leaves 2′ – 3′ long. Sheaths loose, brown Racemes 2′ – 3′ long. Achenium 4″ – 5″ long.

6. BRUNNICHIA, Banks.

Flowers perfect. Calyx bell-shaped, 5-parted, the tube enlarged in fruit and enclosing the free achenium. Stamens 8 or 10. Styles 3, slender: stigmas entire. Ovule borne on a slender cord from the base of the ovary, pendulous. Achenium obtusely 3-angled. Seed 6-furrowed. Embryo in one of the angles of the mealy albumen. — A smooth vine, climbing by terminal tendrils. Leaves ovate or cordate-ovate, petioled, acute, deciduous. Sheaths obsolete. Flowers greenish, in axillary and terminal racemes, on slender pedicels, which become indurated and flattened in fruit.

1. **B. cirrhosa,** Banks. River banks, Florida to South Carolina. April – May. — Stem shrubby, 10° – 20° long. Leaves 2′ – 3′ long Racemes 3′ – 6′ long. Bracts ovate, acuminate, 3 – 5-flowered. Fruiting pedicels curved.

7. ERIOGONUM, Michx.

Flowers perfect or polygamous, surrounded by an involucre. Calyx deeply 6-cleft. Stamens 9. Ovary free, 3-sided. Styles 3: stigmas capitate. Achenium 3-angled or 3-winged. Embryo straight in the axis of the albumen, or more or less curved. — Downy or woolly herbs. Leaves alternate, opposite or whorled. Sheaths none. Inflorescence various.

1. **E. longifolium,** Nutt. Stem erect, tomentose, corymbose above, leafy below; lowest leaves clustered, oblong linear, long-tapering at the base, the upper scattered, the uppermost bract-like; involucre stalked; calyx herbaceous, equal. — Sand ridges, East Florida. ♃ — Stem 2° – 3° high. Lowest leaves 3′ – 5′ long.

2. **E. tomentosum,** Michx. Stem erect, tomentose, corymbose above, leafy throughout; lowest leaves clustered, obovate-oblong, long-petioled, the others in whorls of 3 – 4, elliptical, sessile; involucre sessile; calyx white, un-

equal. — Dry pine barrens, Florida to South Carolina. July – Sept. ♃ — Stem 2° – 3° high. Lowest leaves 4′ – 6′ long. Flowers very numerous, secund.

ORDER 111. LAURACEÆ. (LAUREL FAMILY.)

Aromatic trees or shrubs (except Cassyta), with alternate simple minutely dotted leaves, without stipules, and perfect or polygamous clustered flowers. — Calyx 6 – 9-parted, imbricated in 2 rows. Stamens 6 or more, in 1 – 4 rows: anthers adnate, 2 – 4-celled, opening by lid-like valves. Ovary free, 1-celled, with a solitary anatropous suspended ovule. Style simple, thick: stigma obtuse. Fruit a drupe or berry. Seed without albumen. Embryo large. Radicle superior.

Synopsis.

TRIBE I. **LAURINEÆ.** Fruit naked. — Trees or shrubs.

* Flowers perfect. Stamens 12, the 3 inner ones sterile.

1. PERSEA. Anthers 4-celled, 4-valved. Calyx persistent.
2. NECTANDRA. Anthers 4-celled, 4-valved. Calyx lobes deciduous.

* * Flowers diœcious. Stamens 9, all fertile.

3. SASSAFRAS. Involucre none. Anthers 4-celled.
4. LINDERA. Involucre 4-leaved. Anthers 2-celled.
5. LITSEA. Involucre 2 – 4-leaved. Anthers 4-celled.

TRIBE II. **CASSYTEÆ.** Fruit enclosed in the fleshy calyx. — Leafless twining parasites.

6. CASSYTA. Flowers perfect. Stamens 9. Anthers 2-celled.

1. PERSEA, Gærtn. RED BAY.

Flowers perfect. Calyx deeply 6-parted, persistent. Stamens 12, in 4 rows, the inner ones sterile and gland-like. Filaments pubescent, the inner fertile ones biglandular. Anthers 4-celled, those of the two outer rows introrse, of the inner row extrorse. Stigma disk-like. Drupe ovoid. — Trees or shrubs, with evergreen entire petioled leaves, and greenish or white flowers, in axillary peduncled clusters or panicles.

1. **P. Carolinensis,** Nees. Branchlets smoothish; leaves oblong or lanceolate-oblong, smooth and deep green above, glaucous beneath, obscurely veined; flowers silky, in cymose clusters, on peduncles shorter than the petioles; calyx lobes unequal, persistent; drupe blue. (Laurus, *L.*) – Rich shady woods, Florida to North Carolina. July. — A tree 20° – 40° high. Leaves 2′ – 3′ long.

Var. **palustris,** Chapm. Shrubby; the branchlets, lower surface of the leaves, and flowers densely tomentose; leaves strongly veined, pale green, varying from oval to lanceolate; peduncles longer than the petioles. — Ponds and pine barren swamps. July. — Shrub 4° – 10° high. Leaves 3′ – 6′ long. Flowers larger.

2. NECTANDRA, Rottb.

Calyx rotate, 6-parted, the lobes deciduous. Anthers nearly sessile, 4-celled. Drupe with its base enclosed in the cup-like persistent calyx tube. Otherwise like the preceding.

1. **N. Willdenoviana,** Nees. Smooth; leaves lanceolate-oblong, reticulate, shining, on short margined petioles; flowers minute in narrow axillary panicles which are commonly shorter than the leaves; calyx white, pubescent within, the nearly equal lobes deciduous; filaments very short, the innermost bearded at the apex; drupe black. — South Florida. — Shrub 6°–9° high. Leaves 3′–5′ long. Fruiting pedicels club-shaped.

3. SASSAFRAS, Nees.

Involucre none. Flowers diœciously polygamous. Calyx 6-parted, spreading. Stamens of the sterile flowers 9, in 3 rows, all fertile, the 3 inner ones biglandular at the base; those of the fertile flowers 6, sterile: anthers linear, 4-celled, 4-valved, introrse. Style subulate: stigma disk-like. Drupes blue, on thick red pedicels. — Trees, with entire or 2–3-lobed deciduous leaves, and greenish flowers in clustered racemes, appearing before the leaves.

1. **S. officinale,** Nees. Leaves ovate, entire or 2–3-lobed, smooth or pubescent; racemes short, silky; flowers sometimes white. (Laurus Sassafras, *L.*) — Dry open woods and old fields. March. — A small tree with spicy bark.

4. LINDERA, Thunb. SPICE-BUSH.

Involucre 4-leaved. Flowers diœciously polygamous. Calyx 6-parted. Stamens of the sterile flowers 9 (more numerous and rudimentary in the fertile flowers), in 3 rows: filaments slender, the inner ones lobed and glandular at the base: anthers ovate, 2-celled, 2-valved, introrse. Style short. Drupe obovoid, red, the pedicels not thickened. — Shrubs, with entire deciduous leaves, and dull yellow flowers in lateral sessile clusters, appearing before the leaves.

1. **L. Benzoin,** Meisn. Branches slender, smooth; leaves oblong-obovate, acute at the base, paler and pubescent beneath, soon smooth; clusters numerous, smooth. (Laurus, *L.*) — Banks of streams and low woods, Florida, and northward. Feb.–March. — A shrub 6°–10° high, with spicy bark. Leaves 3′–5′ long.

2. **L. melissæfolia,** Blume. Leaves oblong, short-petioled, obtuse or slightly cordate at the base, silky on both sides, as also the branchlets and clusters, at length smooth above; drupes obovoid. (Laurus, *Walt.*) — Margins of ponds, West Florida to North Carolina. Feb.–March. — A shrub 2°–3° high. Leaves 1′–2′ long.

5. LITSEA, Lam.

Involucre 2–4-leaved. Flowers diœcious. Calyx 6-parted, deciduous. Stamens of the sterile flowers 9, in 3 rows; those of the fertile flowers numerous and rudimentary: anthers 4-celled, 4-valved, introrse. Stigma peltate. Drupe globose. — Trees or shrubs, with entire leaves, and small flowers in clustered umbels.

1. **L. geniculata,** Benth. & Hook. Branchlets smooth, zigzag, spreading; leaves small, oval or oblong, soon smooth, deciduous; involucre 2–4-flowered; flowers yellow, appearing before the leaves; drupe red. (Laurus,

Walt.) — Shallow pine barren ponds, Florida, and northward. Feb. – March. — A large shrub, with numerous spreading forked branches. Leaves somewhat coriaceous, ½′ – 1′ long.

6. CASSYTA, L.

Flowers perfect. Calyx 6-cleft, persistent, the exterior lobes minute. Stamens 12, in 4 rows, the inner row sterile: anthers 2-celled, the inner ones extrorse, the outer introrse. Style very short: stigma disk-like. Fruit enclosed in the fleshy persistent tube of the calyx. — A leafless parasitic plant, with twining filiform stems, and spiked flowers.

1. **C. filiformis,** Miller. — South Florida. — Spikes 2 – 4-flowered. Calyx lobes thick, triangular, acute. Anthers oval, obtuse.

ORDER 112. THYMELEACEÆ. (MEZEREUM FAMILY.)

Shrubs with acrid juice, tough bark, simple entire dotless leaves, without stipules, and regular perfect flowers, with a tubular or bell-shaped 4 – 5-cleft rarely entire calyx. Stamens commonly twice as many as the calyx lobes, in 2 rows: anthers 2-celled, opening lengthwise. Style simple: stigma capitate. Drupe with a single suspended anatropous seed, containing little or no albumen. Cotyledons plano-convex. Radicle superior.

1. DIRCA, L. LEATHERWOOD.

Calyx bell-shaped, entire, or obscurely 4-toothed. Stamens 8, unequal, exserted. Style filiform. Albumen none. — A low branching shrub, with alternate petioled oblong or obovate deciduous leaves, and light yellow flowers, from hairy buds, appearing before the leaves.

1. **D. palustris,** L. — Shady banks of streams, Florida, and northward. Feb. – March. — Shrub 2° – 3° high, with pale spreading jointed branches. Leaves 2′ long, silky when young. Flowers three in a cluster, on short pedicels. Drupe small, red.

ORDER 113. SANTALACEÆ. (SANDALWOOD FAMILY.)

Herbs, shrubs, or trees (ours root parasites), with simple entire exstipulate leaves. — Calyx tubular, 4 – 5-cleft, valvate in the bud, the tube coherent with the ovary. Stamens 4 – 5, opposite the lobes, and inserted on the fleshy disk at their base: anthers introrse, opening lengthwise. Ovary 1-celled, with 1 – 4 anatropous ovules suspended from the apex of the free central placenta. Style single. Fruit 1-seeded. Embryo small, at the apex of copious albumen. Cotyledons cylindrical. Radicle superior. — Parasitic on the roots of various trees or shrubs.

Synopsis.

* Flowers perfect.

1. COMANDRA. Anthers connected with the calyx lobes by a tuft of hairs. Leaves alternate.

* * Flowers diœcious. Shrubs.

2. DARBYA. Calyx 4–5-cleft. Anthers connected with the calyx lobes by a tuft of hairs. Leaves opposite. Flowers umbelled.
3. PYRULARIA. Calyx 5-cleft. Stamens 5. Anthers free. Albumen oily. Leaves alternate. Flowers spiked.
4. BUCKLEYA. Calyx limb double, each 4-lobed. Stamens 4. Anthers free. Albumen fleshy. Leaves nearly opposite. Flowers terminal.

1. COMANDRA, Nutt.

Flowers perfect. Calyx bell-shaped, 5-cleft, the persistent lobes alternating with the lobes of the disk. Stamens 5: anthers connected with the calyx lobes by a tuft of hairs. Stigma capitate. Fruit nut-like, 1-seeded. — Smooth perennial herbs, with alternate leaves, and small greenish white flowers, in axillary and terminal umbel-like peduncled clusters.

1. **C. umbellata,** Nutt. Stem branching above; leaves sessile, lanceolate or oblong; peduncles several, corymbose, 3–5-flowered, mostly longer than the leaves; style slender, fruiting calyx urn-shaped. — Dry soil in the upper districts. April–May. — Stem 8′–10′ high. Leaves ½′–1′ long.

2. DARBYA, Gray.

Flowers polygamo-diœcious, top-shaped, 4–5-cleft, the lobes ovate, spreading. Stamens 4–5, inserted in the sinuses of the crenately 4–5-lobed disk: filaments short: anthers connected with the calyx lobes by a tuft of hairs. Style thick. Stigma 3–4-lobed. Ovule solitary. Fruit 1-celled, 1-seeded. — A small shrub, with opposite oval membranaceous short-petioled leaves, and small greenish flowers in axillary peduncled umbels.

1. **D. umbellulata,** Gray. — Alabama to North Carolina, in the middle districts. — Shrub 1°–1½° high. Leaves 1′ long, smooth. Peduncles 3–8-flowered, shorter than the leaves. Fertile flowers solitary.

3. PYRULARIA, Michx. Oil-Nut.

Flowers diœcious. Calyx 5-cleft, the lobes recurved. Disk composed of 5 roundish glands. Stamens of the sterile flowers short, alternate with the glands. Fertile flower pear-shaped. Style short and thick: stigma depressed-capitate. Drupe pear-shaped, fleshy. Albumen oily. — A low branching shrub, with alternate deciduous leaves, and small greenish flowers in a short terminal spike.

1. **P. oleifera,** Gray. — Shady banks on the mountains, Georgia, and northward. May. — Leaves petioled, obovate oblong, acute at each end, pubescent, 3′–4′ long. Drupe 1′ long.

4. BUCKLEYA, Torr.

Flowers diœcious. Calyx club-shaped, the limb double, each 4-parted; the exterior lobes linear, leafy, somewhat persistent, the interior triangular-ovate, slightly imbricated in the bud, deciduous. Stamens 4. Disk of the fertile flower 4-lobed, fleshy. Style short: stigma 4-lobed. Drupe oblong, compressed, furrowed. Embryo slender, in the axis of copious fleshy albumen. — An erect shrub, with straight slender branches. Leaves nearly opposite, distichous, lanceolate, acute, pubescent. Flowers terminal, greenish, the sterile umbellate, the fertile solitary.

1. **B. distichophylla,** Torr. — Mountains of North Carolina (*Buckley*). — Shrub 6° – 7° high. Leaves thin, 1′ – 1½′ long. Calyx tube 4″ – 5″ long, scarcely longer than the exterior spreading lobes, much longer than the inner ones. Drupe ½′ long.

ORDER 114. LORANTHACEÆ. (MISTLETOE FAMILY.)

Parasitical shrubby plants, with evergreen almost veinless leaves, without stipules, and perfect or diœcious flowers. — Calyx of 2 – 8 sepals, distinct, or united into a tube, valvate in the bud, sometimes wanting. Stamens as many as the sepals and opposite them. Ovary 1-celled, commonly with a single suspended ovule. Style simple or none. Fruit berry-like. Seeds anatropous. Embryo longer than the fleshy albumen.

1. PHORADENDRON, Nutt. MISTLETOE.

Flowers diœcious, in short jointed spikes. Calyx of the sterile flower globular, 2 – 4-lobed. Anthers sessile at the base of the lobes, transversely 2-celled. Calyx of the fertile flower adnate to the ovary. Stigma sessile. Berry globose, pulpy, 1-seeded. — Evergreen shrubs, growing on the branches of various trees, with brittle jointed stems, thick persistent leaves, and small flowers in axillary spikes.

1. **P. flavescens,** Nutt. (Viscum, *Pursh.*) — Florida to Mississippi, and northward. April – May. — Plant yellowish, 2° – 3° long. Branches opposite or whorled. Leaves obovate, fleshy. Spikes shorter than the leaves. Berry white, glutinous.

ORDER 115. PIPERACEÆ. (PEPPER FAMILY.)

Chiefly herbs with jointed stems, entire leaves, and perfect achlamydeous flowers in bracted spikes or racemes. — Stamens few or many, hypogynous: anthers opening lengthwise. Ovaries single, or 3 – 5, and more or less united. Ovules few or solitary, orthotropous, ascending. Embryo minute, contained in a cavity at the apex of the albumen. Fruit 1 – few-seeded.

1. SAURURUS, L. LIZARD'S-TAIL.

Stamens 4 – 8, with long club-shaped filaments. Anthers introrse. Fruit somewhat fleshy, composed of 3 – 4 partly united 1 – 2-seeded carpels, pointed with as many recurved stigmas. — Flowers white.

1. **S. cernuus,** L. Stem erect, branching; leaves alternate, petioled, cordate-ovate or oblong-ovate, acuminate; spikes white, terminal, nodding at the apex; flowers numerous, each from the axil of a small bract. — Marshes and muddy banks, Florida, and northward. May – August. — Rhizoma creeping. Stem 1° – 2° high. Spikes 4′ – 6′ long.

2. PEPEROMIA, Ruiz & Pavon.

Stamens 2, short, lateral. Anthers extrorse. Stigma capitate. Fruit baccate, 1-celled, 1-seeded. — Herbs, with alternate or whorled leaves, and filiform spikes of small crowded peltate-bracted flowers.

1. **P. magnoliæfolia,** C. DC. Leaves mostly alternate, rigid, petioled, obovate, pellucid-punctate; spikes terminal, densely flowered, longer than the leaves; peduncles as long as the petiole; bracts rounded. — East Florida. — Leaves 1½′ – 3′ long.

2. **P. leptostachya,** Chapm. Leaves opposite or whorled, very thin, smaller (1′ or less long), 3-nerved; spikes very slender, rather loosely flowered; otherwise much like the preceding. (Piper leptostachyon, *Nutt.*) — Islands at the mouth of the St. John's River, Florida (*Curtiss*).

ORDER 116. CERATOPHYLLACEÆ. (HORNWORT FAMILY.)

Submerged aquatic herbs, with filiform jointed branching stems, finely dissected whorled leaves, and small axillary monœcious flowers, destitute of floral envelopes, but surrounded by an involucre of 8 – 12 linear leaves. Anthers 12 – 24, oblong, 2 – 3-toothed, sessile. Ovary solitary, simple, with a single suspended orthotropous ovule. Achenium compressed, pointed with the slender persistent style. Albumen none. Cotyledons 4. Plumule conspicuous. — Consisting of the single genus.

1. CERATOPHYLLUM, L. HORNWORT.

1. **C. demersum,** L. Leaves rigid, 6 – 9 in a whorl, once or twice forking, with the lobes spiny-toothed; achenium oval, compressed, tubercular-roughened on the sides, and armed near the base with 2 lateral widely spreading slender spines. — In still water, Florida, and northward. Sept. – Oct. — Stems 1° – 4° long. Leaves near the end of the branches much crowded.

2. **C. echinatum,** Gray? Leaves weak, 9 – 12 in a whorl, 3 – 4 times forking, the ultimate segments bristly-toothed; ovaries warty; achenium oblong, tubercular-roughened on the sides, the edges margined and armed with 5 – 7 strong and spreading spines. — Shallow ponds, on St. Vincent's Island, West Florida. May. — Stems 6′ – 12′ long.

3. **C. submersum,** L. Leaves hair-like, 3 – 4 times forking, bristly-toothed; achenium oblong, slightly compressed, tubercular-roughened, the rounded margins unarmed. — South Florida *Dr. Blodgett.* — Stems 6′ – 12′ long.

ORDER 117. CALLITRICHACEÆ. (WATER-STARWORT FAMILY.)

Small aquatic annuals, with opposite entire leaves, and solitary axillary polygamous flowers without floral envelopes. Stamen mostly solitary, 2-bracted in the sterile flower. Filament slender: anther reniform, the cells confluent Styles 2, slender: stigmas acute. Capsule 4-angled, 4-celled, with a single suspended anatropous seed in each cell, indehiscent. Embryo straight, in copious fleshy albumen. Radicle long, superior. — Consisting of the single genus

1. CALLITRICHE, L. WATER-STARWORT.

1. **C. heterophylla,** Pursh. Floating leaves spatulate or obovate, crowded, the lower ones distant, linear; fruit nearly sessile, 2-bracted, keeled on the back. — Var. TERRESTRIS. Smaller (2′–3′ long); stems much branched, creeping on damp earth; leaves (1″–2″ long) all linear. — Ditches and shallow water, Florida, and northward. March – April. — Stems several, 6′–12′ long. Leaves ½′ long.

2. **C. peploides,** Nutt. Stems creeping; leaves uniform, obovate or spatulate; fruit nearly sessile, circular, notched at the apex, the sides gibbous, grooved around the wingless margin, as long as the widely spreading stigmas. — Florida and westward, on damp earth. Feb. – March.

3. **C. Austinii,** Engelm. Smaller (1′ or less long); fruit short-pedicelled, flattened, wider than long, notched at both ends, with narrow denticulate wings, longer than the spreading stigmas. — Tennessee (*Dr. Gattinger*), and northward. April.

ORDER 118. PODOSTEMACEÆ. (RIVERWEED FAMILY.)

Moss-like aquatic plants, with minute flowers, from a spathe-like involucre, and destitute of floral envelopes. — Stamens 5 – 12: anthers 2-celled. Capsule 2 – 3-celled, pointed by as many persistent styles. Seeds numerous, on a thick central placenta, destitute of albumen.

1. PODOSTEMON, Michx. RIVERWEED.

Spathe 2-leaved. Flowers pedicelled. Filaments elongated, borne on one side of the stalk of the ovary, united below, and bearing only a single anther. Styles 2, simple. Capsule ribbed, 2-celled, 2-valved. Seeds imbricated. — Submerged aquatic plants, attached to rocks and pebbles by disk-like expansions of the stem. Leaves 2-ranked, divided into filiform segments.

1. **P. ceratophyllum,** Michx. Leaves rigid, sparingly divided, sheathing at the base; flowers solitary, on slender pedicels; capsule oval, 8-ribbed. — Rocky places in rivers, Georgia, and northward. July. — Plant olive-green, 1′–4′ long.

2. **P. abrotanoides,** Nutt. Leaves much divided, with hair-like segments; flowers 2–3 together, on short pedicels; capsule oblong, 10-ribbed. — Gravelly places in the Chattahoochee River (*Nuttall.*) — Plant larger than the last.

ORDER 119. EUPHORBIACEÆ. (SPURGE FAMILY.)

Plants commonly with acrid milky juice, and monœcious or diœcious often petaliferous flowers. — Calyx 2–8-lobed, mostly valvate in the bud, sometimes wanting. Stigmas 2–several, simple or divided. Fruit of 2–several (mostly 3) 1–2-seeded carpels united around a central axis, separating at maturity, rarely 1-celled or indehiscent. Seeds suspended, anatropous. Embryo in fleshy albumen. Cotyledons flat.

Synopsis.

§ 1. Ovules and seeds solitary in the cells. Flowers monœcious.

* Flowers without floral envelopes, enclosed in a common cup-shaped involucre.

1. EUPHORBIA. Fertile flower solitary in the 4–5-toothed involucre. Sterile flowers several, each reduced to a single stamen.

* * Flowers in bracted spikes or racemes; the upper ones sterile, the lowest fertile.

+ Flowers apetalous.

++ Stigmas and cells of the capsule 6–7.

2. HIPPOMANE. Carpels woody, indehiscent. Spikes terminal. Staminate flowers clustered.

++ ++ Stigmas and cells of the dehiscent capsule 3.

3. SEBASTIANIA. Fruit dry. Receptacle with a central column. Seed carunculate.
4. STILLINGIA. Fruit dry. Receptacle 3-horned. Seed carunculate.
5. EXCŒCARIA. Fruit fleshy. Receptacle with a central column. Seed not carunculate.
6. ACALYPHA. Stigmas many-parted. Flowers spiked. Bracts of the pistillate flowers leafy, toothed.
7. TRAGIA. Stigmas 3, simple. Flowers racemed. Bracts small, entire.
8. MERCURIALIS. Stigmas 2. Calyx 3-parted. Capsule 2-celled.

+ + Staminate flowers (except No. 2 in Croton), or the pistillate also furnished with petals.

9. CROTON. Pistillate flowers apetalous, or with minute petals. Stamens 6 or more, distinct.
10. CROTONOPSIS. Pistillate flowers apetalous. Capsule 1-celled. Stamens 5, distinct.
11. ARGYROTHAMNIA. Pistillate and staminate flowers 5-petalled. Capsule 3-celled. Stamens 10, monadelphous.

* * * Flowers cymose or panicled.

12. JATROPA. Flowers cymose. Petals scarlet.
13. CNIDOSCOLUS. Flowers cymose. Calyx white, corolla-like. Petals none.
14. RICINUS. Flowers in crowded panicles. Calyx herbaceous.

§ 2. Ovules, and commonly the seeds, 2 in the cells.

* Flowers monœcious, apetalous. Ovary 3-celled. Herbs.

15. PHYLLANTHUS. Flowers axillary. Calyx 5–6-parted. Stamens 3, monadelphous.
16. PACHYSANDRA. Flowers spiked. Calyx 4-parted. Stamens 4, distinct.

* * Flowers diœcious, apetalous. Ovary 2-celled. Shrubs.

17. DRYPETES. Flowers in axillary clusters. Fruit drupaceous, 1-celled, 1-seeded.

1. EUPHORBIA, L. Spurge.

Flowers monœcious, destitute of calyx and corolla; the single pistillate, and several monandrous staminate ones included in a cup-shaped or top-shaped 4 – 5-toothed involucre, which has commonly thick and often colored glands between the teeth. Styles 3, 2-cleft. Capsule exserted, 3-celled: carpels 2-valved, 1-seeded. — A polymorphous genus, with acrid milky juice.

§ 1. *Leaves without stipules.*

* *Stem erect, umbellately branched above: involucres solitary, terminal and in the forks of the branches: leaves of the stem mostly alternate, those of the branches opposite or whorled.*

+ *Glands of the involucre* 5, *with white petal-like appendages: leaves entire: perennials* (*except No.* 6).

1. **E. corollata,** L. Stem smooth or pubescent; branches 4 – 6, twice or thrice forking, mostly short and fastigiate; leaves thick, oblong or oval, obtuse, pale and mostly hairy beneath; involucres pedicelled; appendages of the (green) glands orbicular, showy; capsule and seed smooth. — Var. ANGUSTIFOLIA, Ell. Stems slender; branches mostly 3, forking, elongated, spreading; leaves varying from linear to obovate; involucres small, scattered; appendages of the glands transversely oblong. — Dry rich soil; the var. in sandy pine barrens. July – Sept. — Stem 1° – 2° high.

2. **E. mercurialina,** Michx. Like the preceding, but lower (½° – 1° high); leaves thinner, ovate or roundish; appendages of the glands narrower; seed oval, rugulose. — Rocky woods in the upper districts. May – June.

3. **E. discoidalis,** Chapm. Smooth or pubescent; branches commonly 2, divaricate, forking; leaves linear, obtuse, with the margins revolute; involucres on slender pedicels; glands deep red, bordered by the narrow appendage; seeds obovate, pale, minutely pitted. — Dry sandy pine barrens near the coast, West Florida. Aug. – Oct. — Plant 6′ – 18′ high; the stem much shorter than the branches. Leaves 2′ – 3′ long, 1″ – 2″ wide. Involucres scattered.

4. **E. Curtisii,** Engelm. Smooth; stems filiform; branches mostly 3, erect, sparingly divided; leaves thin, linear or linear-oblong, obtuse, short-petioled, spreading or recurved; involucres minute, scattered, on long capillary pedicels; glands green, margined by the white crenate appendages; capsule erect, short-stalked, round-angled; seed globose, smooth. — Low pine barrens, Florida to North Carolina. August. — Plant 6′ – 9′ high, sometimes branching from the base. Leaves ½′ – 1½′ long.

5. **E. polyphylla,** Engelm. (ined.). Glabrous; stems erect, simple, or branching from the base, 3′ – 6′ high; leaves very numerous, linear, obtuse, 6″ – 9″ long; involucres mostly single, top-shaped; appendages black, bordered with white, crenate; flowers villous; styles 2 – 3, thick, entire; capsule roundish; seeds oval, smooth, white. — South Florida.

6. **E. marginata,** Pursh. Annual; stem stout, 2° – 3° high; leaves ovate, mucronate; sessile, 1′ – 2′ long, the floral ones, like the appendages of the top-shaped involucre, broadly bordered with white. — North Carolina. Introduced from the West.

+ + Glands of the involucre 5, without appendages.

++ Annuals.

7. **E. commutata,** Engelm. Smooth; stems erect or ascending, umbellately or alternately branched; leaves thin, obovate, entire, the lower petioled, those of the branches round-kidney-shaped, sessile; involucres nearly sessile, shorter than the floral leaves; glands crescent-shaped or 2-horned; capsule smooth, round-angled; seeds ovoid, pitted. — Low ground, Chattahoochee, Florida. — Stem 6′ – 12′ high. Leaves ½′ – 1′ long.

8. **E. obtusata,** Pursh. Smooth; stem erect; branches 3 – 5; leaves sessile, serrulate, obtuse; those of the stem wedge-oblong, of the branches ovate; involucre nearly sessile; glands oval; capsule round-angled, warty; seeds smooth. (E. Helioscopia, *Ell.?*) — Shady woods, South Carolina, and northward. July – Sept. — Stem 1° high. Leaves 1′ long.

9. **E. tetrapora,** Engelm. Stem erect, umbellately branched; leaves wedge-shaped, obtuse or emarginate, the upper ones roundish; glands 2-horned; capsule smooth, obtuse-angled; inner face of the seed only 4-pitted. — Georgia, and westward.

10. **E. dictyosperma,** Fisch. & Meyer. Smooth; stem umbellately branched, slender, the branches forking; leaves spatulate-obovate, serrulate near the apex, of the branches cordate; glands round; capsule warty; seeds reticulate. (E. Arkansana, *Engelm.*) — Alabama (*Buckley*), and westward. — Stem 8′ – 12′ high.

11. **E. Lathyris,** L. Annual; stem tall (2° – 3° high), glabrous; leaves closely sessile, lanceolate, the floral ones oblong-ovate, cordate; lobes of the involucre longer than the 2-horned glands. — Waste ground. Introduced.

++ ++ Perennials; leaves entire.

12. **E. Darlingtonii,** Gray. Stem tall; branches 5 – 8, forking; leaves slightly pubescent beneath; those of the stem oblong, of the branches oval or roundish, obtuse, truncate at the base; involucres nearly sessile; glands obliquely oval; capsule obscurely warty; seeds smooth. — Mountains of North Carolina, and northward. July. — Stem 2° – 4° high.

13. **E. sphærosperma,** Shuttlw. Smooth; stem erect; branches 3 – 4, forking; leaves linear or linear-lanceolate, mostly acute, reflexed; of the branches cordate-ovate, clasping, acute; involucres short-pedicelled, green, with the ovate lobes nearly entire, much shorter than the truncate crenate stalked glands; capsule acute-angled; seed roundish, smooth. — Dry pine barrens, Middle Florida. June – August. — Stem 1° – 2° high. Branches of the more sterile plants successively forking and widely spreading, like the two following. Leaves 1′ – 2′ long.

14. **E. inundata,** Torr. Smooth; stem erect, 3-branched or alternately branched from near the base, few-flowered; leaves erect, lanceolate, acute, sessile; of the branches oblong-ovate, clasping; involucre long-pedicelled, reddish, the pubescent lobes 3-toothed; glands orbicular, peltate, entire; capsules acute-angled, smooth. — Pine barren swamps, Florida. April – June. — Stems 6′ – 12′ high, from a thick woody root. Leaves 2′ – 3′ long.

15. **E. telephioides,** Chapm. Smooth and somewhat fleshy; stem thick; branches 3, short, forking; leaves large, oblong-obovate, obtuse, erect, with membranaceous margins; of the branches small, ovate, clasping; involucre purple, slender-pedicelled, the lobes ovate, entire, ciliate, incurved; glands peltate, roundish, entire; capsule acute-angled, smooth. — Low sandy pine barrens near the coast, West Florida. May – June. — Plant light green, 2′ – 5′ high. Stem leaves 2′ – 3′ long, often longer than the branches. Floral leaves 4″ – 6″ long.

* * *Stem erect, successively forking: leaves commonly opposite: involucres in the forks, dark purple: glands* 5, *without appendages: perennials.*

16. **E. Ipecacuanhæ,** L. Stems several from a long perpendicular root, slender, commonly forking from near the base; leaves of the stem and branches similar, opposite, or the lowest rarely alternate, entire, obtuse, varying from linear to round-obovate, short-petioled; peduncles slender, mostly longer than the leaves; involucre small; capsule slender-stalked, nodding, round-angled; seeds minutely pitted. — Dry sandy soil. May – June. — Stem 2′ – 12′ high. Leaves ½′ – 1′ long.

17. **E. nudicaulis,** Chapm. Smooth; stems slender, forking above; leaves minute (½″ long), oval or obovate, the lowest alternate, those of the branches opposite; involucres minute, on short peduncles; glands top-shaped. — Low pine barrens, near St. Joseph's, West Florida. June. — Stems 1° high. Capsule and seeds unknown.

* * * *Branches and leaves alternate: involucres terminal, clustered or single: glands without appendages.*

18. **E. heterophylla,** L. Annual, smooth; stem erect, branching from the base; branches elongated, leafy at the summit; leaves petioled, oblong, fiddle-shaped, toothed or entire, the uppermost deep red at the base; involucres clustered, short-stalked, with 5 incised lobes and a single gland; capsule smooth; seeds globose, warty. — Var. GRAMINIFOLIA (E. graminifolia, *Michx.*) has the leaves all linear and entire. — South Florida, and around dwellings, apparently introduced. May – Oct. — Stem 1° – 2° high. Leaves 2′ long.

19. **E. trichotoma,** HBK. Annual; stem irregularly much branched, very leafy; leaves small, imbricated, oblong-obovate, acute, obscurely crenate, sessile; involucre solitary, top-shaped, sessile; glands 5, peltate; capsule smooth, short-stalked. — South Florida. — Stem low. Leaves 3″ – 4″ long.

20. **E. dentata,** Michx. Annual, erect (1° high), irregularly branching; leaves distant, petioled, ovate, lanceolate, or linear, coarsely toothed, the lower ones alternate, the uppermost ones opposite; involucres nearly sessile, with five toothed lobes, and mostly a single stalked gland; seeds nearly globular, slightly tubercled. — Rich soil, Tennessee, and northward. July – Sept.

§ 2. *Leaves stipulate, all opposite: glands of the involucre* 4.

* *Stems erect or ascending: seeds 4-angled, transversely rugose: annuals.*

21. **E. hypericifolia,** L. Smooth throughout; stem (½° – 2° high) erect; branches alternate, 2 ranked; leaves (½′ – 1′ long) petioled, lanceolate-oblong, oblique and obtuse or acute at the base, equally serrulate on both

margins; stipules reflexed; involucres in dense lateral long-peduncled cymose clusters; appendages of the glands white, kidney-shaped; capsules rather acutely angled, smooth; seed minute, reddish. — South Florida.

22. **E. Preslii,** Guss. Stem often pubescent, ascending (1° – 1½° high); leaves oblong or lanceolate, obtuse or cordate at the base, often blotched with red, sharply serrate on the lower margin, entire below the middle on the upper; clusters terminal; appendages of the glands rounded, entire; capsule round-angled, smooth; seeds larger, nearly black. — Cultivated grounds. August – Sept.

23. **E. buxifolia,** Lam. Stem stout, smooth, ascending, alternately branching or forking from the base, purple; leaves very numerous, somewhat fleshy, nearly sessile, oblong-ovate, cordate, acute, entire, with the margins involute, the uppermost crowded; involucres in dense terminal clusters; glands peltate, orbicular, bordered by a white appendage; capsule smooth, acute-angled; seed bluish, faintly rugose. — Sandy sea-shore, South Florida. — Stem 1° high. Leaves 3″ – 5″ long. Stipules fringed.

24. **E. pilulifera,** L. Pubescent; stem erect or prostrate, forking from the base; leaves short-petioled, oblong-ovate, oblique, acute at each end, serrate; involucres minute, in dense terminal short-stalked clusters; glands without appendages; capsule acute-angled, hairy; seeds faintly rugose. — South Florida, Mobile (*Mohr*). — Stem 4′ – 6′ high. Leaves 5″ – 8″ long.

∗ ∗ *Stems prostrate, diffuse: leaves small: involucres small and mostly crowded near the summit of the branches.*

+ *Perennial.*

25. **E. Garberi,** Engelm. (ined.). Softly villous throughout; stems widely branching; leaves oval or obovate, oblique, entire, short-petioled; stipules ciliate-laciniate; flowers single in the upper axils; glands narrowly margined; capsule acutely angled; seeds reddish-brown, transversely 2-ribbed. — Sandy coast, South Florida. — Stem 1° or more long.

26. **E. deltoidea,** Engelm. (ined.). Stems (2′ – 4′ long) diffuse, glabrous; leaves (1½″ long or less) petioled, obliquely deltoid, cordate, or reniform, sprinkled with short hairs, the margins narrowly revolute; stipules minute, entire; involucre single, terminal, turbinate, pedicelled, with downy lobes, and transversely oblong glands without appendages; styles very short; capsule (immature) acutely 3-angled, glabrous. — South Florida (*Curtiss*).

+ + *Annual: smooth.*

27. **E. serpyllifolia,** Pers. Smooth; leaves oval or obovate, oblique and acute or obtuse at the base, obscurely serrulate, petioled; stipules ovate, entire, or sparingly short-fringed; appendages of the glands white, transversely oblong; capsule smooth, acute-angled; seed 4-angled, granular-roughened and faintly wrinkled on the sides. — South Florida. May – Oct. — Stems 6′ – 12′ long. Leaves 2″ – 5″ long.

28. **E. serpens,** HBK. Smooth, small (4′ – 8′ long); leaves round-ovate, entire (½″ – 2″ long); stipules triangular, toothed; peduncles single; appendages of the gland minute or none; capsule smooth, acutely angled; seeds smooth and even, obtusely 4-angled. — South Florida, Mississippi, and westward.

29. **E. ammannioides,** HBK. Smooth throughout; stems long (2° – 3°), filiform, prostrate, alternately branched; leaves oblong (2″ – 3″ long), entire; rounded and mucronate at the apex, short-petioled; stipules 2-parted; flowers single, terminal, and in the forks of the branches; glands margined with white; capsule obtusely triangular; seeds ovate, obscurely triangular, smooth and even. — Roberts's Key in Caximbas Bay, South Florida.

30. **E. cordifolia,** Ell. Smooth; leaves petioled, oval or roundish, entire, obtuse, cordate or truncate and oblique at the base; stipules slender, deeply parted into long capillary segments; appendages of the glands conspicuous, oblong or roundish, white; capsule smooth, acute-angled; seed 4-angled, smooth and even. — Sandy pine barrens, South Carolina, and westward. July – Sept. — Stems 6′ – 18′ long. Leaves 4″ – 6″ long, pale green.

31. **E. polygonifolia,** L. Smooth and somewhat fleshy; leaves oblong or linear-oblong, entire, oblique, obtuse or slightly cordate at the base, petioled; stipules by pairs, 2 – 3-parted; glands of the involucre slightly margined by the narrow appendages, rather shorter than the subulate obtuse lobes; capsule smooth, acute-angled; seed large, obovate, not angled, smooth and even. — Drifting sands along the coast. July – Oct. — Stems 4′ – 12′ long. Leaves ½′ long. Involucres densely bearded within. Seed whitish.

+ + + *Annual; pubescent.*

32. **E. maculata,** L. Pubescent; leaves oblong, serrate, oblique at the base, petioled, often blotched with purple; stipules 2-parted; capsule acute-angled, hairy; appendages of the glands transversely oblong, white; seed 4-angled, smooth, faintly wrinkled or pitted on the concave sides. — Cultivated ground and waste places, very common. June – Oct. — Stems 6′ – 12′ long. Leaves 3″ – 4″ long.

33. **E. humistrata,** Engelm. Prostrate, pubescent; leaves elliptical or obovate, oblique at the base, serrulate near the apex (4″ – 9″ long); stipules fimbriate; flowers in dense lateral clusters; involucre cleft on the back; appendages of the gland red or white, truncate or crenate; capsule acutely 3-angled; seeds ovate, obtusely angled, minutely roughened. — Rich soil, Tennessee, and westward.

34. **E. prostrata,** Ait. Prostrate, more or less pubescent (4′ – 6′ long); leaves oval, slightly serrulate, smooth above (2″ – 3″ long); flowers in lateral clusters; involucre top-shaped; appendages narrow; capsule long-ciliate on the angles; seeds 4-angled, strongly rugose. — Waste places, Florida, and westward.

35. **E. adenoptera,** Bertolini. Prostrate; stems shortly villous; leaves obliquely oblong, denticulate; stipules subulate, ciliate; involucre top-shaped, hirsute, deeply cleft without, the ciliate lobes lanceolate; appendages rosy; capsule hirsute, acute-angled; seeds oblong, 4-angled, transversely furrowed. — South Florida (*Curtiss*).

2. HIPPOMANE, L.

Flowers monœcious, apetalous, in thick cylindrical spikes. Sterile flowers clustered in the axil of a broad entire bract. Calyx top-shaped, 2-lobed. Stamens 2, exserted: anther cells separate. Fertile flower solitary at the base of the spike. Calyx 3-parted, many-bracted. Ovary sessile, 6–7-celled. Style short and thick: stigmas 6–7, acute, spreading. Fruit fleshy, of few woody 1-seeded indehiscent carpels. — A small tree, with milky poisonous juice, and short and thick branches. Leaves alternate, stipulate, petioled, ovate, serrulate, acute or acuminate, smooth, approximate at the summit of the branches. Petioles biglandular at the apex. Spikes greenish.

1. **H. Mancinella,** L. — South Florida. — Branches roughened with the scars of the deciduous leaves. Leaves 1′–2′ long. Spikes 2′ long, terminal,, solitary. Clusters of flowers with a gland-like bract on each side. Fruit resembles an apple.

3. SEBASTIANIA, Müller.

Flowers monœcious, in bracted spikes, the lowest pistillate and fertile. Calyx 3-toothed or lobed. Stamens 3, free or united below. Styles 3, distinct. Capsule dry, enclosing a central column. Seed carunculate. — Trees or shrubs. Leaves alternate, stipulate.

1. **S. ligustrina,** Müll. Shrubby; branches alternate, slender; leaves petioled, ovate-lanceolate or oblong-ovate, mostly obtuse, narrowed at the base, entire; stipules ovate; spikes short, often by pairs, shorter than the leaves, lateral and terminal; stamens 3; capsule and oval seed smooth. — River swamps, Florida to North Carolina, and westward. May–August. — Shrub 6°–12° high. Branches spreading. Leaves 1′–3′ long.

2. **S. lucida,** Müll. Smooth; leaves coriaceous, petioled, obovate or oblong, obtuse or emarginate, crenate; fertile flowers solitary or by pairs, long-peduncled, nodding; capsule round-angled, smooth, like the ovoid seed. — South Florida. — Tree 30°–40° high. Leaves 1′–1½′ long.

4. STILLINGIA, Gard.

Bracts with a fleshy gland on each side. Styles monadelphous near the base. Receptacle without a central column, strongly 3-horned. Seeds carunculate. — Shrubs.

1. **S. sylvatica,** L. (Queen's Delight.) Herbaceous; stems clustered, erect or ascending from a thick woody root, umbellately branched; leaves somewhat crowded, nearly sessile, thickish, varying from linear-lanceolate to obovate, obtuse or acute, crenate-serrulate; spikes yellowish, terminal, and in the forks of the stem, longer than the leaves; glands cup-shaped; stamens 2; capsule roughish; seed globose. — Light dry soil, Florida to North Carolina, and westward. April–Sept. — Stems 1°–3° high. Leaves 1′–2′ long. Spikes 2′–3′ long.

2. **S. aquatica,** Chapm. Shrubby; stem single, erect from a fibrous spongy root, umbellately or alternately branched above, thickened near the base; leaves lanceolate, mostly acute, tapering at each end, short-petioled, sharply serrulate, the uppermost yellowish; stipules bristly; spikes mostly shorter than the leaves, terminal and in the forks of the stem; glands peltate; stamens 2; capsule smooth; seeds globose, pitted, silvery-coated. — Pine barren ponds, Florida to South Carolina. May–Sept. — Stem 3°–6° high. Leaves 2′–4′ long.

5. EXCŒCARIA, L.

Mainly like the two preceding, but the fruit fleshy or baccate, the seeds not carunculate, often enveloped in a spongy or fatty coat, and the sterile flowers diandrous. — Shrubs or trees.

1. **E. sebifera,** Mull. Arborescent; leaves long-petioled, rhomboidal, acuminate, entire; spikes terminal, densely flowered; sterile flowers pedicelled; calyx 4-toothed; stamens 2; capsule roughish; seeds white. — Georgia and South Carolina, near the coast; introduced from China. June – July. — A tree 20° – 40° high.

6. ACALYPHA, L.

Flowers monœcious, apetalous, in axillary and terminal spikes. Staminate flowers clustered, minutely bracted. Calyx 4-parted. Stamens 8 – 16, with the filaments united at the base; anthers pendulous. Pistillate flowers at the base of the staminate ones, or on separate spikes, surrounded by a leafy toothed bract. Calyx 3-parted. Styles 3, many-cleft. Capsule roundish, of three 1-celled, 1-seeded, 2-valved carpels. — Herbs, with watery juice, and alternate serrate leaves.

* *Staminate and pistillate flowers on the same spike.*

1. **A. Virginica.** L. Annual, smoothish or hairy; stem erect, branched; leaves thin, long-petioled, rhombic-ovate or oblong-ovate, acute, coarsely serrate above the middle; staminate spikes few-flowered, mostly shorter than the large 5 – 9-lobed bracts, with 1 – 3 pistillate flowers at the base; capsule pubescent. — Fields and around dwellings. July – Sept. — Stem 1° – 2° high. Leaves, with the petiole, 4′ – 5′ long.

Var. **gracilens,** Müll. Stem slender, 6′ – 18′ high; leaves smaller, lanceolate, obscurely serrate or entire; staminate spikes longer than the serrate or toothed bracts. — Sterile soil. July – Sept.

2. **A. Chamædrifolia,** Müll. Perennial; stems several from a thick and woody root, prostrate, pubescent, simple or sparingly branched; leaves short-petioled, ovate and oblong, obtuse, crenate, hairy; pistillate flowers numerous, crowded at the base of the slender staminate spike, each surrounded by a round-ovate hairy toothed bract; capsule bristly; seed ovoid, smooth. — South Florida. — Stems 4′ – 6′ long. Leaves rigid, 6″ – 8″ long. Spikes mostly terminal.

* * *Staminate and pistillate flowers on separate spikes.*

3. **A. Lindheimeri,** Müll. Stem (1° high) branching, hirsute; leaves rhombic-ovate, serrate, short-petioled (1′ long); spikes very slender; bracts of the numerous pistillate flowers ovate, deeply 5 – 7-toothed, 1 – 2-flowered; ovary hirsute; styles long, setaceously 4 – 6-cleft; seeds minutely pitted — Key West (*Riddell in Herb. Mohr*).

4. **A. Caroliniana,** Walt. Annual; stem erect, much branched, pubescent; leaves thin, smooth, cordate-ovate, sharply serrate, long-petioled; staminate spike lateral, small, the minute white flowers pedicelled; pistillate spike terminal, stout, many-flowered; bracts cut into several subulate lobes; capsule bristly; seeds silvery, pitted. — Cultivated ground. July – Sept. — Stem 1° - 2° high. Leaves 2′ – 3′ long.

7. TRAGIA, Plum.

Flowers monœcious, apetalous, in slender racemes. Sterile flowers few or numerous, caducous. Calyx 3–4-parted. Stamens 2–4, with short and separate filaments. Fertile flowers few or solitary at the base of the raceme. Calyx 5–8-parted. Style 3-cleft: stigmas entire. Capsule bristly, of three globose 1-celled, 1-seeded, 2-valved carpels. — Pubescent or bristly herbs, with watery juice. Leaves alternate. Racemes opposite the leaves and terminal. Bracts small, entire, persistent. Flowers minute, greenish.

1. **T. innocua,** Walt. Low, downy or hairy; stem at length much branched; leaves nearly sessile, varying from broadly ovate, and serrate or toothed throughout, or only at the apex, to linear and entire; racemes shorter than the leaves and few-flowered, or elongated and many-flowered. — Dry sandy soil, Florida, and northward. May – August. ♃ — Stem 6′–12′ high. Leaves 1′–2′ long.

2. **T. urticifolia,** Michx. Bristly, with stinging hairs; stem erect, sparingly branched; leaves petioled, deltoid-ovate or oblong, coarsely serrate, truncate or cordate at the broad base, pale beneath; racemes shorter than the leaves, the sterile flowers somewhat crowded; capsule very bristly. — Dry soil. June – Sept. ♃ — Stems 1°–2° high. Leaves 1′–2′ long.

3. **T. macrocarpa,** Willd. Hirsute; stem twining (2°–4° long); leaves ample, thin, cordate, coarsely and sharply serrate, long-petioled; racemes shorter than the leaves; capsule large. — Florida, Tennessee, and westward.

8. MERCURIALIS, Tourn.

Flowers diœcious, apetalous, in axillary spikes or clusters. Calyx 3-parted. Stamens 8–20, distinct. Styles 2, simple, united at base. Capsule 2-celled, 2-seeded.

1. **M. annua,** L. Smooth, branching (1° high); leaves ovate-lanceolate, crenate-toothed; sterile spike longer than the leaves; fertile flowers clustered; capsule hispid. — Waste places, sparingly naturalized.

9. CROTON, L.

Flowers monœcious, in spikes or racemes. Calyx of the sterile flowers 4–6-cleft or 4–6-parted. Petals 4–6 (wanting in No. 1). Stamens 5–20, distinct: anthers erect, introrse. Glands as many as the calyx lobes and opposite them. Fertile flowers at the base of the sterile spike. Calyx 5–8-cleft or 5–8-parted. Petals minute or wanting. Styles 2–3, once to thrice 2-cleft. Capsule of 3 (rarely 1–2) 1-celled, 1-seeded, 2-valved carpels Glands as many as the calyx lobes or none. — Herbs or shrubs, with watery juice, stellate pubescence, and alternate petioled leaves. Flowers terminal, and at the divisions of the stem.

* *Styles simple: sterile and fertile flowers 5-petalled: stamens numerous.*

1. **C. Alabamensis,** E. A. Smith. Stem tall, woody, much branched; leaves thin, short-petioled, oblong-lanceolate, mostly obtuse, smooth or nearly so above, the lower surface, like the branchlets and racemes, coated with silvery scales; racemes often unisexual, few- or many-flowered; calyx lobes 5,

acute; petals of both sexes scarcely shorter than the calyx, woolly margined; stamens 20 or more; styles simple, truncate or emarginate; capsule much longer than the calyx; seeds glabrous. — Central Alabama, flowering throughout the year. — Stem 6° – 10° high. Leaves 2′ – 3′ long.

* * *Styles very short: stigmas* 18 – 24 : *petals none: stamens mostly* 12 : *capsule 3-celled.*

2. **C. maritimus,** Walt. Herbaceous, widely branched, scurfy-pubescent; leaves thick, ovate, obtuse, entire; spikes long-peduncled, capitate, few-flowered, the sterile and fertile ones mostly separate; calyx 5-cleft, with ovate-obtuse lobes; capsule much longer than the calyx; seeds ovoid, mottled. — Drifting sands along the coast. July – Oct. — Stem 2° – 3° high. Leaves 2′ – 3′ long.

3. **C. Texensis,** Müller. Annual, diœcious, stellate-tomentose; stem dichotomous (1° – 2° high); leaves lanceolate, short-petioled; sterile racemes short; petals none; fertile flowers axillary, solitary; capsule nearly globose, covered with tufts of deciduous down; seed biconvex. — Alabama (*Mohr*), and westward.

* * * *Styles* 3, *twice 2-parted or 2-cleft: stigmas* 12 : *petals of the sterile flowers* 5 – 6, *of the fertile mostly none: stamens* 8 – 30 : *capsule 3-celled.*

4. **C. Elliottii,** Chapm. Annual, stellate-tomentose throughout; stem slender, erect, umbellately much branched; leaves short-petioled, lanceolate or oblong, obtuse at each end; sterile flowers few, minute; calyx 5-parted, unequal, longer than the petals; stamens 8 – 10; fertile flowers several, clustered; calyx 5 – 8-parted, as long as the capsule; seed oval, smooth. (C. ellipticum, *Ell.*) — Pine barrens, Florida to South Carolina. July – Sept. — Stem 2° – 3° high. Leaves 1½′ – 2′ long.

5. **C. capitatus,** Michx. Annual, woolly; stem umbellately branched; leaves long-petioled, lance-oblong, rounded at the base; sterile flowers numerous, the petals fimbriate; fertile flowers crowded; calyx 7 – 10-parted, with the lobes obtuse; seed smooth. — Georgia, along railroads, and westward. — Stem 2° – 4° high.

6. **C. humilis,** L. Low (1° high), shrubby, stellate-tomentose; leaves long-petioled, cordate-ovate, acuminate; racemes densely 10 – 15-flowered calyx woolly, 5-parted; petals of the sterile flower oblong; stamens 20 – 30; petals of the fertile flower narrow-linear; capsule downy. — Florida (*Cabanis*).

7. **C. Betulinus,** Vahl. Stellate-tomentose; stem low (1° – 1½° high), with slender branches; leaves small (1′ or less long), triangular-ovate, truncate at the base, coarsely toothed, rough above, twice as long as the petiole; racemes bisexual; stamens 10 – 11; capsule subglobose. — Rocky pine woods, South Florida (*Curtiss*).

8. **C. argyranthemus,** Michx. Herbaceous, perennial, covered throughout with stellate silvery scales; stem erect, umbellately branched; leaves obovate or oblong, obtuse, entire, narrowed into a petiole; racemes sessile, oblong, obtuse; the fertile flowers numerous and crowded; calyx 5 – 6-parted, with the lobes acute; stamens 10 – 12, hairy; styles long and slender; capsule much

longer than the calyx. — Dry sandy pine barrens, Georgia and Florida. June – Sept. — Stem 6′ – 12′ high. Leaves 1′ – 1½′ long.

* * * * *Styles* 3, *2-cleft: stigmas* 6: *petals of the sterile flowers longer than the calyx, of the fertile ones minute, subulate: stamens* 8: *capsule 3-celled.*

9. **C. glandulosus,** L. Annual, rough with bristly hairs; stem umbellately branched; leaves oblong, obtuse, coarsely serrate, mostly crowded at the divisions of the stem and summit of the branches; the slender petiole biglandular at the apex; racemes small; sterile flowers minute, white; calyx 4-parted; petals 4; fertile flowers few, with the calyx 5-parted. — Dry waste places. July – Sept. — Stem 6′ – 18′ high.

10. **C. linearis,** Jacq. Shrubby, canescent-tomentose; stem slender, branching (3° – 4° high); leaves short-petioled, linear-lanceolate, obtuse; racemes unisexual, the sterile slender, longer than the leaves, minutely many-flowered, the fertile short, few-flowered; styles 2-parted; capsule roundish. — Miami, South Florida (*Garber*).

* * * * * *Styles* 2, *2-parted: stigmas* 4: *petals* 5 *in the sterile flowers, none in the fertile: stamens* 5 – 10: *capsule* 1 – *2-celled.*

11. **C. monanthogynus,** Michx. Annual, stellate-tomentose; stem erect, twice or thrice umbellately branched; leaves on slender petioles, ovate or oblong, entire, obtuse, whitish beneath; racemes in the forks of the branches, few-flowered; the sterile flowers corymbose; the fertile (1 – 2) nodding. — Dry sterile soil, Florida to North Carolina. June – Sept. — Stem 1° high. Leaves 1′ long.

10. CROTONOPSIS, Michx.

Flowers monœcious, pentamerous in terminal and axillary clusters. Ovary 1-celled, 1-ovuled. Stigmas 3, each 2-cleft. Fruit globose, indehiscent, 1-seeded; otherwise like Croton. — A low slender branching annual. Leaves linear or lanceolate, the lower surface, like the branches, coated with silvery scales. Flowers minute.

1. **C. linearis,** Michx. — Dry sandy soil, Florida to North Carolina. August – Sept. — Stem 6′ – 12′ high, alternately branched or forking. Leaves ½′ – 1′ long, alternate or opposite.

11. ARGYROTHAMNIA, Müll.

Flowers monœcious, in axillary spikes. Sterile flowers few. Calyx 5-parted. Corolla of 5 spatulate petals alternating with 5 flattened glands, as long as the calyx. Stamens 10 – 12, in 2 whorls of 5 – 6 each, monadelphous below. Fertile flowers like the sterile, but the petals shorter than the calyx. Style 3-parted, the divisions 2-cleft. Capsule of three 1-celled, 1-seeded, 2-valved carpels. — Shrubs, or herbs, with watery juice.

1. **A. Blodgettii,** (Torr.). Branches smoothish; leaves alternate, oval or oblong, mostly acute, sharply serrulate, smooth, or sprinkled with simple appressed hairs, abruptly short-petioled; sterile flowers 3 – 5, fertile mostly solitary; calyx lobes lanceolate, acute; petals greenish white; capsule rough-hairy; seed globose, wrinkled. — South Florida. — Shrub 1° – 2° high. Leaves 1′ – 2′ long.

12. JATROPHA, L.

Flowers monœcious. Sepals 5, mostly united. Petals 5, or none. Glands of the disk 5, opposite the calyx lobes. Stamens monadelphous. Styles 3 – 4, 2 - 3-cleft, capsule 2 - 4-seeded. — Herbs or shrubs. Leaves mostly palmately lobed.

1. **J. gossypiifolia,** L. Shrubby (2° high); leaves roundish, 3 – 5-lobed, serrate, the petiole bristly, glandular; bracts and calyx bristly-ciliate; petals 5, dark red. — Key West (*Curtiss*), introduced.

13. CNIDOSCOLUS, Pohl.

Flowers monœcious, apetalous, cymose. Calyx corolla-like. Calyx of the sterile flower salver-shaped, 5-lobed. Stamens 10, the 5 inner ones with monadelphous filaments. Fertile flowers intermingled with the sterile ones. Calyx of 5 sepals, convolute in the bud. Styles 3, many-parted. Capsule of three 1-celled, 1-seeded, 2-valved carpels. — Herbs or shrubs, with alternate leaves, and white flowers.

1. **C. stimulosus,** Gray. Herbaceous, bristly with stinging hairs; stem erect, simple or branched; leaves long-petioled, round-cordate in outline, palmately 3 – 5-lobed or parted, the divisions toothed, pinnatifid, or somewhat bipinnatifid, often discolored; calyx showy; capsule oblong; seed oblong, smooth, spotted. (Jatropha stimulosa, *Michx*) — Dry pine barrens, Florida to North Carolina. April - Sept. ♃ — Stem ½° - 2° high. Flowers sometimes diœcious.

14. RICINUS, Tourn. Castor-oil Plant.

Flowers monœcious, apetalous, in a dense oblong panicle, the upper ones fertile. Calyx 3 – 5-parted. Corolla none. Stamens numerous; the filaments much branched: anther-cells distinct, pendulous. Styles 3, 2-parted. Capsule spiny or bristly, of 3 oblong 1-celled, 1-seeded, 2-valved carpels. — Herbs, or (tropical) shrubs or trees, with petioled peltate lobed leaves. Panicles lateral and terminal.

1. **R. communis,** L. Stem large, glaucous; leaves orbicular in outline, palmately 7 – 9-lobed; the lobes oblong or ovate, acuminate, unequally serrate, smooth; petioles glandular; panicles in the forks of the stem, and opposite the leaves, dense, glaucous. Capsules oblong, spiny. — Waste places. Introduced. June – Oct. ① — Stem 3° – 10° high. Leaves 1° in diameter. Stipules large, deciduous. Panicle 6′ – 12′ long.

15. PHYLLANTHUS, Swartz.

Flowers monœcious, apetalous, axillary. Calyx 5 – 6-parted. Stamens 3, monadelphous. Glands 5 – 6. Ovary 3-celled, with two ovules in each cell Styles 3, 2-cleft. Capsule globose, of three 1-celled, 2-seeded, 2-valved carpels — Smooth herbs, with 2-ranked leaves and branches. Flowers small, greenish.

1. **P. Carolinensis,** Walt. Annual; branches erect-spreading; leaves oblong, oval, or obovate, entire, short-petioled; flowers mostly by pairs, one

sterile, the other fertile, on short nodding pedicels; calyx 6-parted, the lobes oblong, obtuse, strongly 1-nerved, membranous on the margins; capsule smooth; seed semicircular, 3-angled, striped with lines of minute raised points. — Low ground, Florida, and northward. August - Sept. — Stem 8′ - 16′ high. Leaves ½′ - 1′ long.

2. **P. Niruri,** L. Annual? branches short, very slender, recurved; leaves crowded, oval (2″ - 4″ long); calyx 5-parted; seed white, smooth, 6-furrowed on the back and 3-furrowed on the sides; otherwise mostly like No. 1. — South Florida. — Stem 6′ high.

3. **P. abnormis,** Baill. Like the preceding, but stouter, and somewhat woody at the base, 6′ - 12′ high, the branches spreading; leaves closer, larger (2″ - 3″ long), elliptical, rounded or subcordate at the base; calyx lobes elliptical; glands of the fertile flower lorate, entire or 2-parted. — Sandy coast of South Florida (*Michaux, Canby*).

16. PACHYSANDRA, Michx.

Flowers monœcious, apetalous, spiked. Calyx bract-like, 4-parted. Sterile flowers numerous. Stamens 4, with club-shaped exserted filaments. Fertile flowers few, at the base of the sterile spike. Ovary 3-celled, with two ovules in each cell. Styles 3, thick, recurved. Capsule of three 1-celled, 2-seeded, 2-valved carpels. — A pubescent creeping perennial herb, with erect simple branches, bearing at the summit several large ovate toothed alternate abruptly long-petioled leaves, and near the base several thick bracted spikes.

1. **P. procumbens,** Michx. — West Florida, and westward, in rich shady woods. Feb. - March. — Flowering stems 1° high. Leaves 3′ - 4′ long, often discolored. Flowers odorous.

17. DRYPETES, Vahl.

Flowers diœcious, apetalous, in axillary clusters. Calyx 4 - 6-parted, lined in the centre with a wavy-lobed disk. Stamens 4 - 10, inserted under the disk: anther cells distinct. Ovary resting upon the disk, 2-celled, the cells 2-ovuled. Styles 2, short, spreading. Fruit drupaceous, 1 - 2-celled, 1 - 2-seeded. — Tropical trees or shrubs, with alternate coriaceous entire smooth petioled leaves, and minute many-bracted flowers.

1. **D. crocea,** Poit. Branches smooth; leaves oblong, acute at each end, somewhat coriaceous, finely veined; clusters many-flowered, shorter than the petioles; calyx 4-parted, and, like the ovary and slightly 4-angled 1-seeded drupe, tomentose; stamens 4, exserted; styles thick, obtuse. — South Florida. — A small tree. Leaves 3′ - 4′ long, smooth and shining. Flowers greenish white.

2. **D. glauca,** Vahl. Branches whitish, warty; leaves glaucous, oblong, obtuse or gland-pointed, coriaceous; clusters few-flowered, as long as the petioles; calyx 5-parted; stamens 10; drupes oval, tomentose. — South Florida. — Leaves 2′ - 3′ long.

ORDER 120. EMPETRACEÆ. (CROWBERRY FAMILY.)

Shrubs, with evergreen linear alternate or whorled leaves, without stipules, and small diœcious or polygamous flowers. — Calyx bract-like, of 2 – 3 sepals, imbricated. Corolla of 2 – 3 petals similar to the calyx, hypogynous. Stamens 2 – 3, alternate with the petals, exserted: anthers 2-celled, extrorse. Ovary 2 – 9-celled, the cells 1-ovuled. Style short or none: stigma lobed or incised. Drupe berry-like, globose, of 2 – 9 one-seeded nutlets. Seeds erect. Embryo in the axis of copious fleshy albumen.

1. CERATIOLA, Michx.

Calyx bracted, of two fringed sepals. Corolla 2-petalled. Stamens 2: anther cells globose. Ovary resting on a fleshy disk, 2-celled, 2-ovuled. Style short. stigma many-cleft. Drupe 2-seeded. — A heath-like erect verticillately much branched shrub, with small linear shining whorled leaves, and axillary (whorled) reddish flowers.

1. **C. ericoides,** Michx. — Dry barren sands, Florida to South Carolina. Nov. — Shrub 2° – 5° high, the young branches pubescent. Leaves 3 in a whorl, 4″ – 6″ long, the margins revolute. Petioles yellowish, appressed. Drupe yellowish, somewhat persistent.

ORDER 121. BATIDACEÆ. (BATIS FAMILY.)

Represented only by

1. BATIS, P. Browne.

Flowers diœcious, in axillary fleshy conical spikes. Bracts of the sterile flowers round-cordate, persistent. Calyx cup-shaped, somewhat compressed, unequally 2-lipped. Petals 4, rhombic-ovate, clawed. Stamens 4, alternate with the petals, partly exserted: anthers oblong, introrse. Fertile flowers consolidated. Bracts deciduous. Calyx and corolla none. Ovary 4-celled, with a single erect anatropous ovule in each cell. Stigma sessile, broad, obscurely 2-lobed. Drupe 4-seeded. Seed oblong, without albumen. Cotyledons fleshy. Radicle inferior. — A smooth maritime shrub, with the habit of Salicornia. Leaves opposite, fleshy, club-shaped, semi-terete. Stipules none. Petals white.

1. **B. maritima,** L. — Salt marshes, Florida, and westward. June – Sept. — Plant pale green, strong-scented. Stems prostrate, 2° – 3° long, the short branching flowering stems erect. Leaves 1′ long. Spikes 3″ – 5″ long.

ORDER 122. URTICACEÆ. (NETTLE FAMILY.)

Herbs, with watery juice, often armed with stinging hairs. Leaves undivided, stipulate. Flowers monœcious or diœcious, apetalous. — Calyx of the sterile flower 4 – 5-parted or 4 – 5-sepalous. Stamens as many as and opposite the sepals. Filaments inflexed in the bud, expanding elastically: anthers 2-celled, introrse. Calyx of the fertile flower 2–4-sepalous. Ovary sessile, free, 1-celled, with a single erect orthotropous ovule. Stigma simple or tufted. Achenium commonly enclosed in the dry persistent calyx. Embryo straight, in the axis of fleshy albumen.

Synopsis.

* Plants armed with stinging hairs.

1. **URTICA.** Stamens 4. Stigma tufted. Achenium straight.
2. **LAPORTEA.** Stamens 5. Stigma subulate. Achenium oblique.

* * Plants destitute of stinging hairs.

+– Flowers in cymose clusters.

3. **PILEA.** Clusters naked. Calyx lobes unequal. Leaves opposite.
4. **PARIETARIA.** Clusters involucrate. Calyx lobes equal. Leaves alternate.

+– +– Flowers in spiked clusters.

5. **BŒHMERIA.** Stigmas subulate, leaves opposite or alternate.

1. URTICA, Tourn. Nettle.

Flowers monœcious or diœcious. Calyx of the sterile flower 4-parted. Stamens 4, inserted around the abortive ovary. Calyx of the fertile flower 4-sepalous, unequal; the inner sepals dilated in fruit, and enclosing the achenium. Stigma sessile, tufted Achenium straight, ovate, smooth, compressed. — Herbs, with stinging hairs, opposite leaves, and greenish flowers, in panicled spikes or close clusters.

* *Flowers in panicled or simple spikes.*

1. **U. gracilis,** Ait. Stem tall, 4-angled, smoothish, slender; leaves long-petioled, ovate-lanceolate, coarsely serrate, acute, rounded at the base, 3–5-nerved, smoothish, the petioles bristly; spikes very slender, loosely panicled. — Low ground in the upper districts. July–August. ♃ — Stem 3°–4° high, mostly simple. Leaves thin, 4′–6′ long.

2. **U. dioica,** L. Hispid throughout; stem 4-angled, pubescent above, branching; leaves rather short-petioled, ovate, cordate, acuminate, coarsely serrate, pubescent beneath; spikes much branched; flowers often diœcious. — Waste places, Carolina (*Pursh*). Introduced. June–August. ♃ — Stem 2°–3° high. Leaves 3′–4′ long, thicker than in No. 1, and flowers larger.

* * *Flowers in simple clusters shorter than the petioles.*

3. **U. urens,** L. Stem 4-angled, hairy; leaves ovate, coarsely serrate 5-nerved, hairy; clusters by pairs in each axil, loose, peduncled. — Waste ground. Introduced. Dec.–Feb. ① — Stem 1° high.

4. **U. Chamædryoides,** Pursh. Stem smooth; leaves small, nearly sessile, ovate, coarsely serrate hairy beneath, hairy and bristly above; clusters nearly sessile, globose, dense; calyx hairy. — Georgia (*Elliott*), and westward. Feb.–March. — Stem 4′–12′ high.

2. LAPORTEA, Gaudich.

Flowers monœcious or diœcious. Calyx of the sterile flowers 5-parted. Stamens 5, inserted around the abortive ovary. Calyx of the fertile flowers 4-sepalous, the 2 inner sepals larger. Stigma subulate, hairy on one side. Achenium oblique, tubercular-roughened. — Herbs, with stinging hairs, alternate long-petioled serrate leaves, and minute flowers in spreading cymes.

1. **L. Canadensis,** Gaudich. Stem hispid; leaves ovate, acuminate, rounded or cordate at the base; the veins and petioles hispid; cymes very slender, single or by pairs, the upper mostly fertile, the lower sterile. — Low shaded places, Florida, and northward. July – August. ♃ — Stem 2° – 4° high.

3. PILEA, Lindl.

Flowers monœcious or diœcious. Calyx of the sterile flower 3 – 4-parted. Stamens 3 – 4. Calyx of the fertile flowers 3-lobed, the lobes unequal or nearly equal, commonly with an inflexed scale-like sterile stamen at the base of each. Stigma sessile, tufted. Achenium ovate, compressed, straight. — Low herbs, destitute of stinging hairs. Leaves opposite, long petioled. Flowers in axillary cymose clusters.

1. **P. pumila,** Gray. Stem angular, simple, smooth, pellucid; leaves membranaceous, ovate or elliptical, acuminate, coarsely serrate, 3-nerved, slightly hairy above; cymes much shorter than the petiole. — Wet shaded places. July – Sept. ① — Stem 6′ – 12′ high. Upper leaves 1′ – 2′ long, the lower not longer than the petiole.

2. **P. herniarioides,** Lindl. Stems erect or creeping, branched, tender, pellucid; leaves small, round-obovate, entire, opaque, transversely marked on the upper surface with white raised lines; clusters shorter than the petiole; flowers minute. — Shaded moist places, Key West. Nov. — Stems 2′ – 4′ long. Leaves 1″ – 2″ long, rather longer than the petiole. Achenium very minute, oblong, terete.

4. PARIETARIA, Tourn. Pellitory.

Flowers polygamous, in axillary cymose clusters, supported by a bract-like involucre. Calyx of the sterile flowers 4 – 5-sepalous. Stamens 4 – 5, inserted around the abortive ovary. Calyx of the fertile flowers 4-parted. Stigma tufted. Ovary surrounded by four sterile, or sometimes perfect, stamens. Achenium ovoid. — Weak downy herbs, without stinging hairs. Leaves alternate, entire, long-petioled. Flowers minute, greenish.

1. **P. Pennsylvanica,** Muhl. Pubescent with straight hairs; stem simple or sparingly branched; leaves thin, oblong-lanceolate, obtuse, roughened with minute elevated dots; clusters dense; flowers shorter than the involucre. — Shaded rocks in the upper districts. May – July. ① — Stem 4′ – 12′ high. Leaves 6″ – 9″ long.

2. **P. debilis,** Forst. Pubescent with straight and hooked hairs intermixed; stem much branched, pellucid; leaves ovate, mostly acuminate, but obtuse, roughened with elevated dots; clusters loose, spreading; flowers as

long as the involucre. — Damp shaded sandy soil near the coast, Florida to North Carolina. June – August. ① — Stem $\frac{1}{2}$° – $1\frac{1}{2}$° long. Leaves 6″ – 9″ long, about the length of the slender petiole.

5. BŒHMERIA, Jacq. FALSE NETTLE.

Flowers monœcious or diœcious, in spiked clusters. Calyx of the sterile flowers 4 – 5-cleft. Stamens 4 – 5. Calyx of the fertile flowers tubular, 4 – 5-toothed or entire. Stigma subulate, hairy. Achenium elliptical, enclosed in the persistent calyx. — Rough herbs with alternate or opposite petioled leaves.

1. **B. cylindrica,** Willd. Pubescent and rough with straight and hooked hairs; leaves opposite and alternate, ovate and ovate-lanceolate, acuminate, serrate, rounded and 3-nerved at the base, on long or short petioles; spikes axillary, mostly leafy at the summit, the fertile ones compactly flowered, short; the sterile interrupted, and sometimes longer than the leaves. — Swampy thickets. July – Sept. ♃ — Stem 1° – 3° high, mostly simple. Leaves 2′ – 5′ long.

ORDER 123. CANNABINACEÆ. (HEMP FAMILY.)

Erect or twining herbs, with opposite incised or lobed and stipulate leaves, and diœcious flowers. Sterile flowers racemose or panicled. Calyx 5-sepalous. Stamens 5, opposite the sepals, not inflexed in the bud. Fertile flowers in bracted spikes. Calyx 1-leaved, embracing the 1-celled ovary. Ovule solitary, erect. Stigmas 2, subulate, pubescent. Fruit indehiscent. Albumen none. Embryo coiled or curved.

1. HUMULUS, L. HOP.

Sterile flowers panicled. Fertile flowers in short axillary and solitary spikes. Bracts leafy, imbricated, 2-flowered, forming in fruit a membranaceous cone. Calyx enlarged in fruit. Embryo spirally coiled. — A rough perennial twining herb, with cordate 3 – 5-lobed leaves, and greenish yellow flowers.

1. **H. Lupulus,** L. — Low grounds along the mountains, Georgia, and northward. June – July. — Stem 6° – 10° high. Leaves petioled, serrate. Achenium covered with resinous yellowish odorous grains.

ORDER 124. MORACEÆ. (MULBERRY FAMILY.)

Trees or shrubs, with milky juice, alternate leaves, with large deciduous stipules, and monœcious or diœcious flowers, crowded in spikes or heads, or enclosed in the fleshy receptacle. — Calyx of the sterile flowers 3 – 4-lobed. Stamens 3 – 4, inserted on the base of the calyx.

Filaments inflexed in the bud, elastic. Calyx of the fertile flowers 3 – 5-sepalous. Ovary 1 – 2-celled, 1 – 2-ovuled. Styles 2. Achenium 1-seeded. Embryo curved, in fleshy albumen.

1. MORUS, Tourn. MULBERRY.

Flowers monœcious, spiked; the sterile and fertile flowers in separate spikes. Calyx 4-parted. Stamens 4. Ovary 2-celled. Styles filiform. Achenium ovate, compressed, covered by the succulent berry-like calyx. — Trees, with rounded leaves, and axillary spikes.

1. **M. rubra,** L. Leaves cordate-ovate, acuminate, serrate, petioled, rough above, white tomentose beneath, on young shoots 3 – 5-lobed; stipules linear; sterile spikes slender, drooping; the fertile ones ovoid or oblong, resembling a blackberry in fruit. — Rich woods. March. — A small tree.

2. **M. alba,** L. Leaves cordate-ovate, acute, serrate, oblique at the base, smooth and shining, sometimes lobed; fruit whitish. — Around dwellings. Introduced. — A small tree.

2. FICUS, Tourn. FIG.

Flowers monœcious or diœcious, lining the inside of the fleshy closed receptacle. Calyx of the sterile flowers 3-parted. Stamens 3. Calyx of the fertile flowers 5-cleft, pedicelled. Styles lateral, slender. Achenium fragile. Embryo hooked. — Trees or shrubs, with entire or lobed leaves, and large convolute stipules. Flowers axillary.

1. **F. aurea,** Nutt. Branches pale, smooth, furrowed; leaves smooth, coriaceous, oblong, entire, narrowed but obtuse at each end, stout-petioled; receptacle orange-yellow, globose, bracted, on short and thick pedicels. — South Florida. — A small tree. Leaves 3′ – 4′ long. Fruit about 4″ in diameter.

2. **F. pedunculata,** Willd. Branches terete, uneven; leaves ovate or oval, coriaceous, entire, smooth, obtuse, rounded or slightly cordate at the base, slender-petioled; receptacle yellowish, globose or obovate, slightly bracted, as long as the slender pedicels. — South Florida. — Tree 20° – 40° high, multiplying by means of aerial roots. Leaves 2′ – 2½′ long, 1½′ wide. Receptacle rather smaller than in No. 1.

3. **F. brevifolia,** Nutt. Branches smooth; leaves cordate-ovate, entire, obtuse, smooth, on short petioles; receptacle purplish-red, depressed-globose, single, short-peduncled, with 2-cleft bracts. — South Florida (*Dr. Blodgett*). — A small tree. Leaves 2′ long, with impressed veins.

F. CARICA, L., is the common cultivated FIG.

BROUSSONETIA PAPYRIFERA, Vent., the PAPER MULBERRY of our yards, belongs to this family.

ORDER 125. ULMACEÆ. (ELM FAMILY.)

Trees, with watery juice, alternate undivided stipulate leaves, and perfect or polygamous apetalous flowers. — Calyx 4 – 9-lobed. Stamens 4 – 9, inserted on the base of the calyx, erect in the bud. Ovary 1 – 2-celled. Ovules solitary, suspended. Styles 2, spreading. Fruit membranaceous or drupaceous. Embryo straight or curved, without albumen. Cotyledons leafy.

Synopsis.

*** Fruit dry. Anthers extrorse.**

1. ULMUS. Flowers perfect. Ovary 2-celled. Fruit winged.
2. PLANERA. Flowers polygamous. Ovary 1-celled. Fruit wingless.

*** * Fruit a drupe. Anthers introrse.**

3. CELTIS. Flowers polygamous. Ovary 1-celled. Cotyledons wrinkled.
4. TREMA. Flowers polygamous. Cotyledons incurved. Albumen fleshy.

1. ULMUS, L. ELM.

Flowers perfect. Calyx bell-shaped, 4 – 9-cleft. Stamens 4 – 9, slender, exserted: anthers extrorse. Ovary 2-celled. Styles short. Fruit 1-celled, 1-seeded, surrounded by a broad membranaceous wing. Embryo straight. — Trees. Leaves short-petioled, mostly oblique, doubly serrate, straight-veined. Stipules deciduous. Flowers greenish or purplish, clustered, appearing before the leaves.

1. **U. fulva,** Michx. (SLIPPERY ELM.) Branchlets pubescent; leaves thick, ovate-oblong, acuminate, broadly serrate, slightly oblique at the base, very rough above, pubescent beneath; calyx and short pedicels pubescent; fruit orbicular, pubescent on the sides, smooth on the margins, with the obtuse teeth erect; expanding buds rusty-tomentose. — Rich woods, West Florida, and northward. Feb. - March. — A small tree. Leaves 4′ – 8′ long. Fruit 8″ – 9″ wide. Inner bark very mucilaginous.

2. **U. Floridana,** Chapm. Branchlets smooth; leaves thick, oblong-ovate, acute or slightly acuminate, broadly serrate, oblique at the base, smooth above, more or less pubescent beneath; pedicels very slender, somewhat racemose, and, like the calyx, smooth; fruit orbicular, fringed on the margins, with the short and broad teeth erect. — Banks of the Chipola River, at Marianna, West Florida. Feb. – March. — A tree 30° – 40° high, with brittle branches. Leaves 3′ – 4′ long. Fruit 2″ – 3″ in diameter. Bud scales downy on the margins.

3. **U. Americana,** L. (ELM.) Branchlets and buds smooth; leaves thin, obovate-oblong, or oval, oblique at the base, sharply serrate, abruptly acuminate, smooth above, pubescent, or at length smooth beneath; pedicels clustered, slender, smooth, like the calyx; fruit oval or obovate, downy on the margins, with the sharp teeth connivent. — Low grounds, Florida, and northward. Feb. - March. — A large tree with spreading branches. Leaves 2′ – 4′ long. Fruit 6″ long.

4. **U. racemosa,** Thomas. Branches corky; bud scales downy on the margins; leaves ovate-oblong, or oval, obliquely cordate, sharply serrate, pubescent beneath; flower clusters racemose; fruit roundish, the margins downy. — River banks, Tennessee, and northward.

5. **U. alata,** Michx. (WHAHOO.) Branches corky-winged; leaves small, ovate-lanceolate, acute, sharply serrate, commonly even and rounded at the base, rough above, pubescent beneath, nearly sessile; flowers clustered, on slender pedicels; fruit oval, downy on the margins. — Rich soil, Florida to North Carolina. — A small tree. Leaves 1′ – 1½′ long.

2. PLANERA, Gmel. PLANER TREE.

Flowers polygamous, clustered. Calyx bell-shaped, 4 – 5-cleft. Stamens 4 – 5: anthers extrorse. Ovary 1-celled. Styles short. Fruit nut-like, coriaceous, wingless. Embryo straight, without albumen. — Small trees, with the foliage of the Elm.

1. **P. aquatica,** Gmel. Leaves ovate, short-petioled, acute, serrate, roughish; flowers in small roundish clusters, appearing before the leaves; nut ovate, covered with warty scales. — River swamps in the lower districts. Feb. – March. — A tree 20° – 30° high. Leaves 1′ – 1½′ long.

3. CELTIS, Tourn. NETTLE TREE.

Flowers perfect or polygamous, apetalous. Calyx of five sepals. Stamens 5: anthers introrse. Ovary 1-celled. Styles 2, slender, pubescent. Drupe globose. Embryo curved around scanty gelatinous albumen. Cotyledons wrinkled. — Trees. Leaves petioled, commonly oblique at the base. Flowers axillary, solitary, or few in a cluster, greenish.

1. **C. occidentalis,** L. Young leaves and branchlets silky; leaves (2′ long) ovate, acuminate, sharply serrate, abruptly contracted at the base, soon smooth, ferruginous beneath; fertile flowers mostly solitary, on drooping peduncles; the sterile ones 2 – 4 in a cluster; drupe dark purple, with a thin sweet pulp. — Rich soil, Georgia, and northward. March. — A tree 40° – 60° high. — Var. INTEGRIFOLIA. (C. integrifolia, *Nutt.*) Leaves ovate or ovate-lanceolate (2′ – 3′ long), acuminate, entire, rounded, or the lower ones cordate at the base, roughened with minute elevated points. — Sandy soil, Apalachicola, Florida (perhaps introduced), and westward. — A small tree. Branches and leaves 2-ranked — Var. PUMILA. (C. pumila, *Pursh.*) Shrubby; leaves (1′ – 1½′ long), ovate, acute, serrate, obtuse at the base, pale beneath, very rough above; drupe glaucous. — Shady woods, Florida to North Carolina. March – April. — Stem 5° – 10° high.

4. TREMA, Lour.

Chiefly like Celtis, but with fleshy albumen, and thick narrow incurved cotyledons. — Trees or shrubs.

1. **T. micrantha,** Benth. & Hook. Shrub very leafy (10° – 15° high), the branchlets, etc. canescent; leaves (1′ long) rigid, oval, serrate; flowers minute, in dense axillary cymose clusters; drupe small, yellow, globose. (Celtis pallida, *Torr.*) — Shell-mounds in Lastero Bay, South Florida (*Garber*).

ORDER 126. PLATANACEÆ. (PLANE-TREE FAMILY.)

Large trees, with alternate palmately lobed petioled stipulate leaves, and monœcious flowers, in axillary long-peduncled globose heads. — Calyx and corolla none. Anthers on short club-shaped filaments, numerous, 2-celled, adnate to the truncated connective. Ovaries numerous, obconical, hairy at the base. Ovules 1 – 2, orthotropous, pendulous. Style subulate. Nut 1-seeded. Seed cylindrical. Embryo in the axis of scarce fleshy albumen. — Flowers intermixed with copious club-shaped scales. — Consisting of the single genus

1. PLATANUS, L. PLANE TREE, SYCAMORE.

1. **P. occidentalis,** L. Leaves (4′ – 9′ wide) round-cordate, angularly lobed and toothed, covered when young with dense whitish down, soon smooth; stipules toothed; heads pendulous (8″ – 12″ in diameter). — River banks, Florida, and northward. March – April. — A large tree, with the white bark separating in thin plates.

ORDER 127. JUGLANDACEÆ. (WALNUT FAMILY.)

Trees, with alternate odd-pinnate exstipulate leaves and monœcious apetalous or minutely petalled flowers. Sterile flowers in pendulous aments. Calyx 2 – 6-parted, the stamens few or numerous. Fertile flowers single or clustered. Calyx 3 – 5-parted, the tube adherent to the incompletely 2 – 4-celled ovary. Fruit drupaceous, with a bony endocarp. Seed 4-lobed, without albumen, orthotropous. Cotyledons oily, 2-lobed. Radicle short, superior.

1. CARYA, Nutt. HICKORY, PIGNUT.

Aments of the sterile flowers mostly three together, on a common peduncle. lateral. Calyx unequally 3-parted. Stamens 3 – 6. Fertile flowers terminal. Calyx 4-parted. Petals none. Stigma large, 4-lobed. Nut smooth, 4 – 6-angled, incompletely 4-celled; the coriaceous epicarp (husk) partly or completely 4-valved. — Trees, mostly with scaly buds. Leaflets serrate. Fruit roundish.

* *Epicarp very thick, 4-valved: seed thick, edible.*

1. **C. alba,** Nutt. (SHELL-BARK HICKORY.) Leaflets 5 – 7 (mostly 5), lanceolate-oblong, or the upper ones obovate-oblong, acuminate, pubescent beneath; fruit depressed-globose; nut roundish, thin-shelled, compressed, 4-angled, slightly pointed. — Rich woods in the upper districts, Georgia, and northward. March – April. — A large tree, with shaggy and scaly bark.

2. **C. sulcata,** Nutt. Leaflets 7 – 9, obovate-oblong, acuminate, pubescent beneath; fruit oval, 4-angled above; nut oblong, thick-shelled, conspicuously pointed, slightly compressed. — Rich woods in the upper districts of Carolina (*Elliott*), and northward. March – April. — A large tree, with scaly bark.

3. **C. olivæformis,** Nutt. (PECAN-NUT.) Leaflets 13–15, lanceolate-oblong, serrate, falcate, acuminate; nut olive-shaped, smooth, thin-shelled, somewhat 4-angled. — River bottoms, Mississippi, northward and westward. — A large tree with smoothish bark.

* * *Epicarp partly 4-valved: seed thin: bark not scaly.*

4. **C. tomentosa,** Nutt. (HICKORY.) Leaflets 7–9 (mostly 7), large, oblong-obovate, acute, pubescent beneath; sterile aments tomentose; fruit large, globose; epicarp thick, coriaceous, parted nearly to the base; nut thick-shelled, oval, somewhat 6-angled. — Rich soil. March–April. — A large tree, with rough bark.

5. **C. glabra,** Torr. (PIGNUT.) Leaflets 5–7 (mostly 7), ovate-lanceolate, acuminate, smooth; fruit obovate, obcordate, or pear-shaped; epicarp thin, parted to the middle, coriaceous; nut thick-shelled, sometimes angled. (C. porcina, *Nutt.*) — Woods. March–April. — A large tree, with smoothish bark.

6. **C. microcarpa,** Nutt. Leaflets 5–7, oblong-lanceolate, smooth, glandular beneath, acuminate; aments smooth; fruit roundish; epicarp thin; nut thin-shelled, slightly 4-angled. — Mountains of North Carolina, and northward. April–May. — A large tree. Fruit ¾′ in diameter.

7. **C. myristicæformis,** Nutt. "Leaflets 5, ovate-lanceolate, acuminate, smooth, the terminal one sessile; fruit oval, rugose, rough; nut oval, slightly acuminate, furrowed, very hard." — South Carolina, at Goose Creek (*Michaux*); Berkeley District (*Ravenel*). — Nuts resembling nutmegs.

8. **C. amara,** Nutt. (BITTER-NUT.) Leaflets 9–11, oblong-lanceolate, acute, smoothish; fruit globular; epicarp thin, parted to the middle; nut thin-shelled, obcordate; seed much wrinkled. — Low ground. March–April. — A tree of moderate dimensions, with smooth bark, and very bitter and astringent seeds.

9. **C. aquatica,** Nutt. Leaflets 9–13, lanceolate, acuminate, slightly serrate, smooth; fruit roundish, 4-ribbed; epicarp thin, 4-parted to the base; nut compressed, thin-shelled, 4-angled; seed much wrinkled. — River swamps, Florida to South Carolina. March–April. — A small tree, with rough bark. Seeds very bitter and astringent.

2. JUGLANS, L. WALNUT, BUTTERNUT.

Sterile aments lateral, solitary. Calyx 5–6-parted. Stamens numerous. Fertile flowers terminal. Calyx 4-cleft. Petals 4, minute. Stigmas 2, long, recurved. Fruit oblong or globose. Epicarp indehiscent. Nut incompletely 4-celled, furrowed or sculptured. — Trees with naked buds. Leaflets serrate.

1. **J. nigra,** L. (BLACK WALNUT.) Leaflets 11–21, ovate-lanceolate, pubescent beneath, acuminate, slightly cordate at the base, or oblique; fruit globose, rough-dotted; nut furrowed. — Rich woods, chiefly in the upper districts. March–April. — A tree 30°–50° high.

2. **J. cinerea,** L. (BUTTERNUT.) Leaflets 15–19, ovate-lanceolate, acute, rounded at the base, pubescent; the petioles, fruit, etc. viscid; fruit oblong; nut deeply sculptured, acute. — Rocky woods in the upper districts. March–April. — A tree 30°–40° high.

ORDER 128. CUPULIFERÆ. (OAK FAMILY.)

Trees or shrubs, with alternate entire or lobed straight-veined stipulate leaves, and monœcious apetalous flowers. Sterile flowers in pendulous slender or capitate aments. Calyx scale-like, or regular and 4 – 6-lobed. Stamens few. Fertile flowers single or clustered, furnished with an involucre which encloses the fruit, or forms a cup at its base. Ovary 2 – 7-celled, with 1 – 2 pendulous anatropous ovules in each cell. Stigmas as many as the cells. Fruit 1-celled, 1-seeded. Albumen none. Cotyledons thick and fleshy. Radicle superior.

Synopsis.

* **Fertile flowers single, or few in a cluster.**

1. **QUERCUS.** Nut solitary, with the base enclosed in a scaly involucre.
2. **CASTANEA.** Nuts 1 – 3, enclosed in a 4-valved spiny involucre; sterile aments elongated, erect.
3. **FAGUS.** Nuts 2, 3-angled, enclosed in a somewhat spiny 4-valved involucre: sterile aments capitate, pendulous.
4. **CORYLUS.** Nut solitary, bony, enclosed in a leafy lacerated involucre.

* * **Fertile flowers spiked.**

5. **CARPINUS.** Nuts 1 – 2, in the axil of an open leafy involucre.
6. **OSTRYA.** Nut solitary, enclosed in a membranaceous inflated involucre.

1. QUERCUS, L. OAK.

Sterile ament slender, bractless, pendulous. Calyx unequally 6 – 8-parted. Stamens 6 – 12, slender: anthers 2-celled. Fertile flowers axillary, solitary, or few in a cluster. Calyx 6-cleft or denticulate, adnate to the 3 – 4-celled ovary. Ovules 2 in each cell. Stigmas obtuse. Nut (*acorn*) oblong or hemispherical, partly (rarely wholly) enclosed in the cup-shaped scaly involucre. Cotyledons very thick, plano-convex. — Trees or shrubs, with simple entire or lobed leaves. Stipules caducous.

§ 1. MELANOBALANUS. (BLACK OAKS). *Bark dark and furrowed: wood porous and brittle: leaves, and their lobes or teeth, bristle-pointed: nuts silky-tomentose within: stamens* 4 – 6: *styles long and spreading; abortive ovules near the top of the seed.*

* *Fruit biennial.*

+ *Leaves deciduous.*

++ *Leaves entire; those on vigorous shoots often lobed or toothed.*

1. **Q. Phellos,** L. (WILLOW OAK.) Leaves (2′ – 3′ long) lanceolate or linear-lanceolate, bristle-awned, scurfy, like the branchlets, when young, becoming smooth on both sides; fruit small, sessile; cup flattish, enclosing the base of the hemispherical nut. — Margins of swamps and streams. — A tree, 40° – 50° high.

Var. **laurifolia.** (Q. laurifolia, *Michx.*) Leaves larger (3′ – 4′ long), oblong-lanceolate; cup deeper and more pointed at the base. — Light uplands, Florida to North Carolina. — A tree commonly larger than the preceding.

2. **Q. imbricaria,** Michx. (SHINGLE OAK.) Leaves lanceolate-oblong, acute or obtuse at each end, mucronate, pale and downy beneath, deciduous; fruit middle-sized; cup narrowed at the base, enclosing one half or one third of the nearly hemispherical nut, the broad and whitish scales closely appressed. — Mountains of North Carolina. — A tree 40° - 50° high. Leaves 3′ - 5′ long.

3. **Q. cinerea,** Michx. (HIGH-GROUND WILLOW OAK.) Leaves perennial, oblong-lanceolate, obtuse or acute, mucronate, white tomentose beneath; fruit small, sessile; cup shallow, narrowed at the base, pale, enclosing one third of the hemispherical nut. — Dry sandy pine barrens. — A small tree, fruiting abundantly. Leaves 2′ - 3′ long, scurfy, like the branchlets, when young.

++ ++ *Leaves dilated upward, mostly 3-lobed at the top.*

4. **Q. aquatica,** Catesb. (WATER OAK.) Leaves perennial, short-petioled, obovate-oblong or wedge-shaped, smooth on both sides, obtusely 3-lobed at the summit, often entire, or on young shoots pinnatifid-toothed or lobed, mostly awnless when old; fruit small, mostly sessile; cup shallow, flat, enclosing the base of the hemispherical downy nut. — Swamps and wet banks. — A small tree, with smooth bark. Leaves 2′ - 3′ long, with tufts of down in the axils of the veins when young.

5. **Q. nigra,** L. (BLACK JACK.) Leaves short-petioled, coriaceous, broadly wedge-shaped, rounded at the base, mostly 3-lobed at the summit, bristle-awned, smooth above, rusty-pubescent beneath, deciduous; fruit middle-sized, on short and thick peduncles; cup top-shaped, with coarse truncate scales, enclosing one third or one half of the oblong-ovate nut. — Dry gravelly or sandy soil. — A small tree. Leaves 4′ - 9′ long. Intermediate forms between this and No. 7 are not uncommon.

++ ++ ++ *Leaves sinuate-pinnatifid, bristle-awned.*

= *Leaves smooth or nearly so.*

6. **Q. Catesbæi,** Michx. (TURKEY OAK.) Leaves somewhat coriaceous, broad, narrowed into a short petiole, deeply pinnatifid; the lobes very acute from a broad base, spreading, mostly falcate and entire; fruit rather large, short peduncled; cup thick, turbinate, with broad obtuse scales, enclosing half of the ovoid nut; the upper scales inflexed and lining the inner edge of the cup. — Dry pine barrens. — A small tree. Leaves 6′ - 9′ long.

7. **Q. coccinea,** Wang. (SCARLET OAK.) Leaves long-petioled, oval or oblong, with deep and broad sinuses, and 6 - 8 entire or sparingly toothed lobes, truncate at the base, smooth and shining on both sides; cup top-shaped, with coarse scales, enclosing one half or one third of the ovoid nut. — Dry woods; more abundant in the upper districts. — Leaves turning bright scarlet after frost.

Var. **tinctoria,** Gray. (BLACK OAK.) Leaves obovate-oblong, with deep or shallow open sinuses, and about 6 sharply-toothed lobes, obtuse or truncate at the base, pubescent when young, at length only in the axils of the veins beneath; cup top-shaped, with broad scales, enclosing about half of the roundish depressed nut. (Q. discolor, *Ait.*) — Dry woods, chiefly in the upper districts. — A large tree, with the outer bark dark brown, the inner thick and yellow. Leaves turning light brown after frost. Nuts 6″ – 8″ long.

8. **Q. rubra,** L. (RED OAK.) Leaves oblong, with open shallow sinuses, and 8 – 12 entire or sharply toothed lobes, smooth on both sides, paler beneath; fruit large, cup shallow, flat, with fine scales, enclosing the base of the ovate or oblong nut. — Rocky woods, Florida, and northward. — A large tree. Leaves turning dark red after frost. Nut 1′ long.

9. **Q. Georgiana,** M. A. Curtis. Shrubby; leaves small, very smooth, somewhat obovate, wedge-shaped at the base, with deep or shallow open sinuses, and 3 – 5 triangular-lanceolate entire acute or obtuse lobes; fruit short-peduncled; cup smooth and shining, saucer-shaped, enclosing one third of the oval-globose nut. — Stone Mountain, Georgia (*Ravenel*). — Shrub 6° – 8° high, growing in clusters. Leaves 3′ – 4′ long. Fruit abundant. Nut ½′ long.

10. **Q. palustris,** Du Roi. (PIN OAK.) Leaves long-petioled, oval, truncate or abruptly acute at base, with broad and rounded sinuses, and 5 – 7 sparingly-toothed lobes, smooth on both sides; cup shallow, with appressed scales, enclosing the base of the nearly globular nut. — East Tennessee (*Gattinger*), and northward. — A middle-sized tree. Nut ½′ long.

= = *Leaves tomentose beneath.*

11. **Q. falcata,** Michx. (SPANISH OAK.) Leaves oblong, rounded at the base, 3 – 5-lobed; the lobes entire or sparingly toothed at the apex, the terminal one commonly narrow and elongated; fruit rather small; cup somewhat top-shaped, with coarse scales, enclosing half of the globular nut. — Var. PAGODÆFOLIA, *Ell.*, has larger leaves, with 11 – 13 nearly opposite and spreading lobes. — Dry woods. — A large tree. Leaves 4′ – 5′ long, entire near the base. Nut ½′ long.

12. **Q. ilicifolia,** Wang. (BEAR OAK.) Shrubby; leaves obovate, with 3 – 5 angular or short and broad mostly entire lobes, acute at the base, white-tomentose, like the branchlets, when young, at length smooth and dark green above; fruit short-peduncled; cup shallow, saucer-shaped, with coarse scales, enclosing about one third of the ovate nut. — Barren soil in the upper districts. — A shrub 3° – 4° high. Leaves 3′ – 5′ long. Fruit abundant.

+ + *Leaves persistent.*

13. **Q. myrtifolia,** Willd. Leaves rigid, ovate or obovate, acute or obtuse, 1′ – 2′ long, entire, the margins revolute. Fruit nearly sessile, single or clustered. Cup shallow, one fourth the length of the ovate or globose nut. — Dry sandy soil along the coast. — Stem 4° – 8° high, rarely taller. Leaves 1′ – 2′ long.

* * *Fruit annual.*

14. **Q. pumila,** Walt. (RUNNING OAK.) Branchlets slender, pubescent; leaves mostly deciduous, cuneate-lanceolate, slightly undulate, nearly sessile, white-tomentose beneath; fruit small, single; cup shallow; nut ovate. — Sandy pine barrens in the lower districts. — Stems 2° – 8° high, from long creeping roots. Leaves 1′ – 3′ long.

§ 2. LEUCOBALANUS. (WHITE OAKS.) *Bark pale, and mostly scaly: wood tough: leaves not bristle-pointed, their lobes commonly obtuse: nut smooth within: stamens 6 – 8: stigmas sessile: abortive ovules at the base of the seed: fruit annual.*

* *Leaves deciduous.*

+ *Leaves sinuate-lobed.*

15. **Q. stellata,** Wang. (POST OAK.) Leaves with 5 – 7 broad rounded or notched lobes separated by wide open sinuses, narrowed at the base into a short petiole, pubescent beneath; cup hemispherical, enclosing one third or one half of the oval nut. — Cold clayey soil, Florida, and northward. — A tree 40° – 50° feet high. Nut ½′ long. Leaves 4′ – 6′ long.

Var. **parvifolia.** Leaves smaller (1½′ – 3′ long), oblong, obtuse, entire or sinuate-toothed, nearly smooth on both sides, rusty-pubescent, like the branchlets, when young; nut larger. — Sandy soil near the coast. — A shrub or small tree.

16. **Q. alba,** L. (WHITE OAK.) Leaves oblong or obovate-oblong, with 7 – 9 mostly obtuse and entire narrow lobes separated by narrow sinuses, narrowed into a petiole, densely tomentose, like the branchlets, when young, at length smooth or glaucous beneath; fruit large, nearly sessile; cup hemispherical, enclosing one third of the oblong-ovate nut. — Damp woods. — A large tree with white bark. Leaves 4′ – 6′ long. Nut about 1′ long.

17. **Q. macrocarpa,** Michx. (MOSSY-CUP OAK.) Leaves thin, obovate-oblong, pubescent or pale beneath, acute at the base, short-petioled, slightly or strongly few many-lobed; the lobes rounded, entire or obtusely-toothed; fruit large; scales of the cup thick, the upper ones produced into long awns; nut ovoid, included, or half enclosed in the cup. — Woods and river banks, Tennessee, and westward. — A middle-sized tree. Leaves 6′ – 15′ long. Nut 1′ – 1½′ long.

18. **Q. lyrata,** Walt. (OVER-CUP OAK.) Leaves crowded at the end of the branchlets, obovate-oblong, acute at the base, 7 – 9-lobed, white-tomentose beneath, or at length smoothish, shining above, the lobes triangular, acute, and entire; fruit sessile: cup round-ovate, with rugged scales, almost covering the roundish nut. — River-swamps, Florida to North Carolina. — A large tree. Leaves 5′ – 8′ long, short-petioled. Fruit 1′ long.

+ + *Leaves toothed.*

19. **Q. prinus,** L. (SWAMP CHESTNUT OAK.) Leaves oblong or obovate-oblong, obtuse, with rounded teeth, smooth and shining above, pale and pubescent beneath, acute at the base, short-petioled; fruit large, short-peduncled; cup hemispherical, rugged with tubercular scales, enclosing the base of the roundish or oblong-ovate nut. — Low grounds. — A large tree. Nut about 1′ long.

20. **Q. Michauxii,** Nutt. Leaves rather rigid, oblong, obtuse or cordate at the base, the teeth short and rounded, velvety beneath; fruit very large, short-peduncled; scales of the hemispherical cup tubercular; nut oblong-ovate. — Low ground and river swamps, chiefly in the lower districts — A large tree, with flaky bark. Leaves 4′ – 5′ long Nut 1½′ long.

21. **Q. bicolor,** Willd. (SWAMP WHITE OAK.) Leaves obovate, acute at the base, coarsely and obtusely toothed or somewhat lobed, dark green above, white-tomentose beneath; fruit long-peduncled, cup tubercular, hemispherical; nut oblong-ovate (1′ long). — Swamps along the mountains. — A large tree.

22. **Q. Muhlenbergii,** Engelm. (CHESTNUT OAK.) Leaves oblong varying to lanceolate, acuminate, sharply toothed, with the points incurved, mostly acute at the base, smooth above, paler and minutely pubescent or glaucous beneath; fruit small, sessile or short-peduncled; cup hemispherical, with flat scales, enclosing one third of the oblong nut. — Rocky woods, chiefly in the upper districts. — A large or middle-sized tree. Leaves 3′ – 6′ long. Nut 7″ – 9″ long.

23. **Q. prinoides,** Willd. (CHINQUAPIN OAK.) Shrubby; leaves lanceolate-oblong, acute at each end, acutely toothed, smooth above, white-tomentose beneath; fruit small, mostly sessile; cup hemispherical, with flat scales, enclosing about one half of the round-ovate nut. (Q. Chinquapin, *Pursh.*) — Barren soil in the upper districts. — Shrub 2° – 6° high. Leaves 3′ – 4′ long. Nut 8″ – 9″ long.

24. **Q. Durandi,** Buckl.? Smooth, with ash-colored branchlets; leaves oblong or wedge-oblong, entire, emarginate, or 3-lobed at the summit, tapering or abruptly contracted into a short petiole; fruit very small, closely sessile; cup shallow, flattened, enclosing the base of the ovate nut. — Rocky banks, Georgia, Florida, and westward. — A lofty tree. Leaves 3′ – 4′ long. Nut 4″ – 5″ long.

* * *Leaves persistent.*

25. **Q. virens,** Ait. (LIVE OAK.) Branchlets tomentose; leaves coriaceous, perennial, oblong, obtuse, somewhat rugose, smooth and shining above, hoary-tomentose beneath, the margins revolute; fruit long-peduncled; cup top-shaped, hoary, enclosing the base of the oblong chestnut-brown nut. — Dry or wet soil, in the lower districts. — Commonly a large tree with spreading branches. Leaves 2′ – 4′ long.

Var. **maritima.** (Q. maritima, *Willd.*) Shrubby (4° – 10° high); leaves smooth, lanceolate, concave, mostly acute; fruit larger. — Sand ridges along the coast, Florida to South Carolina.

Var. **dentata.** (Q. nana, *Willd.*?) Dwarf (1° – 2° high); earliest leaves flat, wedge-obovate or obovate-oblong, mucronate, toothed, at length smooth, the others lanceolate and entire; fruit sessile or short-peduncled, often clustered. — Flat pine barrens, Florida. — Leaves nearly sessile.

2. CASTANEA, Tourn. CHESTNUT.

Sterile flowers in separate clusters, in long erect cylindrical aments. Calyx 5 – 6-parted. Stamens 8 – 15: anthers 2-celled. Fertile flowers 1 – 3, enclosed in the bell-shaped, at length globose, 4-valved and very prickly involucre. Calyx 5 – 6-lobed, superior. Abortive stamens 5 – 12. Ovary 3 – 6 celled. Ovules single or by pairs in each cell. Stigmas 3 – 6, bristle-like, spreading. Nuts 1 – 3, roundish, compressed, or plano-convex. Cotyledons very thick. — Trees or shrubs, with oblong petioled sharply-serrate straight-veined leaves.

1. **C. vesca,** L. (CHESTNUT.) Leaves oblong-lanceolate, acuminate, coarsely serrate, smooth on both sides; nuts mostly 3, the middle one flattened, the 2 outer ones plano-convex, dark brown. — Dry woods, mostly in the upper districts. April. — A large tree. Leaves 6′ – 7′ long.

2. **C. pumila,** Michx. (CHINQUAPIN.) Leaves oblong, acute, or obtuse, finely serrate, hoary-tomentose beneath; nuts solitary, nearly globular. (C. nana, *Muhl.*, a form with larger leaves and nuts.) — Dry sandy soil, Florida, and northward. April – May. — A large shrub or small tree. Leaves, involucre, and nut smaller than those of the preceding.

3. FAGUS, Tourn. BEECH.

Sterile flowers capitate, on long and drooping peduncles, with deciduous bracts. Calyx bell-shaped, 5 – 6-cleft. Stamens 8 – 12: anthers 2-celled. Fertile flowers solitary or by pairs, peduncled, surrounded with numerous linear bracts and a 4-lobed involucre. Calyx of 4 – 5 subulate lobes. Ovary 3-celled, with two ovules in each cell. Styles 3, filiform. Nuts commonly 2, acutely 3-angled, enclosed in the soft-spiny 4-valved involucre. Cotyledons thick and fleshy. — Trees, with whitish bark, and straight-veined leaves expanding with the flowers.

1. **F. ferruginea,** Ait. Leaves oblong-ovate or rhombic, acute, finely serrate, silky on both sides when young, when old only on the veins beneath; spines of the involucre short, recurved. — Damp sandy soil. April. — A large tree, with widely spreading branches.

4. CORYLUS, Tourn. HAZEL-NUT.

Sterile flowers in cylindrical pendulous bracted aments. Calyx 2-cleft, partly united with the bract. Stamens 8: anthers 1-celled. Fertile flowers clustered. Ovary 2-celled, 2-ovuled. Stigmas 2, filiform. Involucre tubular at the base, leafy and lacerated at the summit, enclosing a single bony (edible) nut. — Shrubs, with broadly cordate doubly serrate petioled leaves. Flowers appearing before the leaves.

1. **C. Americana,** Walt. (HAZEL-NUT.) Branchlets glandular; leaves round-cordate, coarsely serrate, acuminate, pubescent; involucre roundish at the base, dilated and flattened above the nut, glandular-hairy; nut roundish, somewhat flattened. — Rich soil along the margins of woods and thickets, West Florida, and northward. Feb. – March. — Shrub 5° – 6° high, tough and flexible. Leaves 4′ – 6′ long.

2. **C. rostrata,** Ait. (BEAKED HAZEL-NUT.) Branchlets smooth; leaves ovate or oblong-ovate, slightly cordate, acuminate, finely serrate, rather thin, pubescent; involucre bristly, prolonged into a tube above the nut, 2-cleft and toothed at the summit; fruit nearly globular. — Rich soil in the upper districts. March – April. — Shrub 4° – 6° high.

5. CARPINUS, L. HORNBEAM.

Flowers destitute of floral envelopes, supported by scale-like bracts. Sterile flowers in drooping cylindrical aments. Stamens 8 – 14: filaments short: anthers 1-celled, hairy at the apex. Fertile flowers spiked. Bracts 2-flowered, deciduous. Ovary 2-celled, 2-ovuled. Stigmas 2, filiform. Nut solitary, angular, sessile in the axil of an open 3-lobed leaf-like involucre. — Trees, with simple ovate or oblong straight-veined deciduous leaves, folded in the bud. Flowers expanding before the leaves.

1. **C. Americana,** Michx. (HORNBEAM.) Branchlets smooth and slender; leaves oblong-ovate, acute or slightly acuminate, sharply and doubly serrate, rounded at the base, more or less pubescent. Fertile spikes terminal, long-peduncled, 6 – 12-flowered; involucre unequally 3-lobed, the middle lobe longer and serrate on one side; nut small, ovate, compressed, 8-ribbed. — Rich woods. March. — A small tree, with hard and close-grained wood.

6. OSTRYA, Micheli. HOP HORNBEAM.

Sterile flowers in drooping cylindrical aments, each in the axil of a scale-like bract, destitute of a calyx. Stamens with the filaments irregularly united. Fertile flowers in a short terminal crowded spike, each enclosed in a membranaceous involucre. Ovary 2-celled, 2-ovuled, bearded at the apex. Stigmas 2, filiform. Fruiting involucre inflated, nerved, hairy or bristly at the base, enclosing the solitary pointed nut. — Small trees, with ovate or oblong serrate short-petioled deciduous leaves. Flowers appearing with the leaves.

1. **O. Virginica,** Willd. (HOP HORNBEAM.) Leaves ovate-oblong, sharply and simply serrate, acuminate, rounded or slightly cordate at the base, pubescent; fertile spike cone-like, short-peduncled; the imbricated involucres oblong, mucronate, bristly at the base. — Rich woods. March. — A small tree, with hard and close-grained wood.

ORDER 129. MYRICACEÆ. (WAX-MYRTLE FAMILY.)

Chiefly shrubs, with simple alternate leaves, with or without stipules, and monœcious or diœcious flowers, disposed in aments, destitute of calyx or corolla, each in the axil of a simple bract. Stamens 2 – 10; the short filaments free or partly united: anthers 2-celled. Ovary solitary, 1-celled, surrounded at the base with a row of scales. Ovule solitary, orthotropous or amphitropous. Involucre none. Stigmas 1 – 2, elongated. Fruit a dry 1-seeded drupe. Albumen none. Cotyledons fleshy. Radicle superior.

1. MYRICA, L. WAX-MYRTLE. BAYBERRY.

Flowers in short axillary aments, diœcious, each in the axil of the scale-like bract. Calyx and corolla none. Stamens 2 – 10, with the filaments united below. Ovary enclosed in a cup of 3 – 5 rounded scales. Ovule orthotropous. Stigmas 2 (rarely 4), flattened on the inner face, widely spreading. Nut globose, covered with waxy grains. — Shrubs or small trees dotted with minute resinous and odorous glands. Branches clustered. Leaves short-petioled, serrate or entire. Stipules none.

1. **M. cerifera,** L. (Wax-Myrtle, Bayberry.) Branchlets pubescent; leaves lanceolate or oblong-lanceolate, mostly obtuse, entire, or with a few sharp serratures near the apex, smooth, or pubescent on the veins beneath, tapering into a petiole; sterile aments very numerous, oblong; bracts wedge-shaped; stamens 4; fertile aments small; bracts rounded, obscurely 3-lobed; scales of the ovary 4, ciliate; stigmas 2; fruit abundant, white. — Margins of swamps, mostly near the coast, Florida, and northward. March–April. — A shrub or small tree. Leaves persistent along our southern limits, but northwardly deciduous, 1½′–4′ long.

Var. **pumila,** Michx. Low (1°–2° high), much branched; leaves smaller (½′–2′ long), persistent, varying from wedge-obovate to wedge-lanceolate or linear-spatulate, coriaceous, obtuse, mostly toothed near the apex; aments minute, ovoid, few-flowered. — Sandy pine barrens.

2. **M. Carolinensis,** Mill. Branchlets smooth or hairy; leaves larger, obovate-oblong, entire, or slightly serrate near the apex, mostly rounded or emarginate at the summit; aments and nuts larger; scales of the sterile flower roundish. — Wet pine barrens. — Shrub 2°–4° high. Leaves mostly deciduous.

3. **M. inodora,** Bartr. Smooth; leaves perennial, coriaceous, oblong, obtuse, very entire, tapering into a petiole, with the margins revolute; sterile aments oval or oblong, with the roundish bracts transversely ridged on the back; stamens about 10, monadelphous; fertile aments small, elongated in fruit; stigmas 2 or 4; scales of the ovary 5; nuts large, black, commonly solitary. — Margins of pine barren ponds and swamps, Florida, near the coast. Feb.–March. — A shrub or small tree, with whitish bark. Leaves about 2′ long, sparingly dotted. Nuts ovoid, 3″ long.

2. COMPTONIA, Solander. Sweet Fern.

Flowers monœcious. Sterile ament cylindrical, with kidney-shaped acuminate bracts. Stamens 3, forked. Fertile ament globular, bur-like. Ovary surrounded by 5–6 long and slender persistent scales; ovule orthotropous. Stigmas 2, spreading. Nut ovoid-oblong, smooth. — Low shrubs, with narrow pinnatifid leaves, and small semicordate stipules.

1. **C. asplenifolia,** Ait. Leaves thin, short-petioled, linear-lanceolate, with numerous rounded lobes, deciduous; fertile aments at the base of the sterile, appearing before the leaves. — Dry woods, North Carolina, and northward. April. — Plant 1°–2° high, aromatic when bruised. Leaves 3′–4′ long, resembling those of a fern.

Order 130. LEITNERIACEÆ. (Leitneria Family.)

Intermediate between the Wax-Myrtle and Willow Families, and includes only the following genus.

1. LEITNERIA, Chapm.

Flowers in aments, diœcious, each in the axil of a scale-like bract. Calyx and corolla none. Sterile ament many-flowered, cylindrical, elongated; bracts ovate, acuminate, imbricated, staminiferous at the base, hairy, the lower ones empty; stamens 5 – 10, free: anthers 2-celled, introrse. Fertile ament few–many flowered, narrowly cylindrical, short, in fruit elongated; bracts ovate, approximate, at length scattered, the lower ones empty. Ovary ovoid, nearly smooth, with the base surrounded by a cup of 4 minute ovate toothed scales. Ovule solitary, amphitropous. Stigma solitary, thick, elongated, channelled. Drupe oblong, obtuse, narrowed at the base: epicarp thick, coriaceous, smooth. endocarp crustaceous. Albumen none. Embryo large, filling the cell. Cotyledons oval, compressed. Radicle superior. — A stout shrub, 2° – 6° high, with soft wood and smooth light brown bark, without resinous dots. Branches short and thick, hoary-pubescent when young. Leaves oblong or obovate-oblong (4′ – 6′ long), acute at each end, entire, smooth and shining above, hoary-tomentose beneath, straight-veined, on long spreading or recurved hoary petioles, deciduous. Stipules none. Aments developed before the leaves, from the axils of the preceding year, the sterile ones 1′ – 1½′ long, the fertile 6″ – 8″ long. Drupe ½′ long, green, slightly curved.

1. **L. Floridana,** Chapm. — Salt or brackish marshes, Apalachicola, Florida. Feb. – March.

ORDER 131. BETULACEÆ. (BIRCH FAMILY.)

Trees or shrubs, with alternate simple straight-veined leaves, deciduous stipules, and monœcious amentaceous flowers, placed 2 – 3 together in the axil of a 3-lobed bract. Stamens 4: filaments distinct. Ovary 2-celled, with a single suspended anatropous ovule in each cell. Stigmas 2, elongated. Fruit a winged or angled 1-celled 1-seeded nut, forming, with the imbricated persistent bracts, a cone-like spike.

1. BETULA, Tourn. BIRCH.

Sterile aments drooping. Bracts 3-flowered, 2-bracteolate, peltate. Calyx scale-like. Stamens short: anthers 1-celled. Fertile aments oblong or cylindrical. Bracts 3-flowered. Calyx none. Stigmas filiform. Nut broadly winged. Cotyledons oblong. — Trees or shrubs, with the outer bark often separable into thin papery sheets. Leaves petioled, serrate. Fruiting bracts membranaceous.

1. **B. nigra,** L. (RED BIRCH.) Leaves rhombic-ovate, acute, doubly serrate, smooth above, hoary-tomentose beneath, like the short petioles and branchlets, becoming rusty or smoothish; sterile aments long and drooping: the fertile ones oblong, short-peduncled, with the woolly bracts cleft into three linear-oblong nearly equal lobes. (B. rubra, *Michx.*) — Banks of rivers. March — A middle-sized tree, with reddish brown bark, and long spreading branches.

2. **B. lutea,** Michx. (YELLOW BIRCH.) Leaves ovate or oblong-ovate, acuminate, unequally and doubly serrate, pubescent, like the branchlets, when young, at length smooth on both sides, on short pubescent petioles; fruiting aments oval-oblong; lobes of the bracts nearly equal, slightly spreading and

hairy, acute. — Mountains of North Carolina. March – April. — A tree 40° – 60° high, with yellowish bark. Leaves 2′ – 3′ long.

3. **B. lenta,** L. (CHERRY BIRCH.) Branchlets smooth; leaves ovate or oblong-ovate, acute, cordate, finely and doubly serrate, silky when young, at length only on the petioles and veins beneath; fruiting aments oblong; lobes of the bracts widely spreading, acute, smooth. — Cool shady banks in the upper parts of Georgia, and northward. March. — A middle-sized tree, with dark brown rugged bark, and close and fine-grained wood. Young twigs spicy and aromatic.

2. ALNUS, Tourn. ALDER.

Sterile aments elongated, drooping. Bracts peltate, 5-bracteolate, 1 – 3-flowered. Calyx 4-parted or (in No. 2) scale-like. Stamens 4: anthers 2-celled. Fertile aments short, erect. Bracts fleshy, 2-flowered. Calyx of four minute scales, adherent to the bracts. Bracts of the fruiting ament woody, persistent. Nut angled or winged. — Shrubs or small trees. Leaves petioled, serrate, the stalked buds covered with a single scale. Fertile aments racemed.

1. **A. serrulata,** Ait. Leaves obovate, obtuse or abruptly pointed, serrulate, commonly pubescent beneath, acute at the base, short-petioled; stipules oval, obtuse; fruiting aments ovoid, short-peduncled; fruit ovate, wingless. — Banks of streams. Jan. – March. — Shrub 3° – 12° high. Leaves 2′ – 4′ long, thickish, and partly persistent at its southern limits. Calyx of the sterile flowers 4-parted.

2. **A. viridis,** DC. Leaves oval, rounded at both ends, slightly oblique at the base, finely and sharply serrate, softly pubescent on the lower surface, or only on the veins and petiole; stipules ovate; calyx of the sterile flowers scale-like; fruiting aments ovoid, long-peduncled; fruit winged. High mountains of North Carolina. April. — A low much branched shrub. Leaves 1′ – 2′ long.

ORDER 132. SALICACEÆ. (WILLOW FAMILY.)

Trees or shrubs, with soft wood, alternate simple stipulate leaves, and diœcious amentaceous flowers, destitute of calyx and corolla, each solitary in the axil of a simple bract. Stamens 2 – many. Ovary 1-celled or imperfectly 2-celled, with numerous erect anatropous ovules in each cell. Styles 2, very short, more or less united: stigmas 2-lobed. Fruit a 2-valved many-seeded capsule. Seeds minute, clothed with long silky hairs. Albumen none. Cotyledons elliptical, flattened. Radicle pointing downward.

1. SALIX, Tourn. WILLOW.

Bracts of the aments entire. Flowers each with 1 – 2 small glands. Stamens 2 – 6, free, or their filaments cohering at the base. Stigmas short, 2-lobed. — Leaves commonly narrow, short-petioled. Stipules scale like and deciduous, or leafy and persistent. Buds covered with a single scale. Aments mostly erect, appearing with or before the leaves.

* *Aments small, sessile: ovary silky: stamens 2.— Low canescent shrubs, with small leaves. Aments developed before the leaves.*

1. **S. tristis,** Ait. Leaves very numerous, lanceolate, obtuse or acute, entire or wavy, at least on the margins, tapering at the base, nearly sessile, covered with a grayish down, at length smoothish above; stipules minute, caducous; flowering aments small, globular; the oval bracts hairy on the margins; style short; ovary slender, long-beaked. — Dry barren soil in the upper districts. March – April. — Shrub 1° – 2° high. Leaves 1′ – 2′ long.

2. **S. humilis,** Marshall. Leaves lanceolate, obtuse or abruptly pointed, narrowed into a petiole, smoothish above, grayish-pubescent beneath, often slightly serrate near the summit; stipules small, semi-cordate or lunate, entire or toothed; flowering aments ovoid or oblong, often drooping, with the lanceolate bracts villous; style conspicuous; ovary slender. — Barren soil, in the upper districts. March. — Shrub 2° – 4° high, often bearing cone-like excrescences.

* * *Aments large, cylindrical, sessile, silky-villous, developed before the leaves: ovaries woolly. — Large shrubs.*

3. **S. discolor,** Muhl. Branchlets pubescent; leaves oblong, petioled, acute at each end, serrate in the middle, smooth and shining above, glaucous beneath; stipules semi-lunar, toothed; aments woolly, with glossy hairs; stamens 2; ovary white-silky, sessile. — Low ground, Carolina (*Pursh*), and northward. April. — Shrub 8° – 10° high. Leaves 2′ – 4′ long. Aments 1′ – 1½′ long.

* * * *Aments large, cylindrical, on leafy peduncles or branchlets, appearing with the leaves: ovaries smooth, stalked.*

4. **S. Floridana,** Chapm. Leaves ovate-lanceolate, acute, smooth above, glaucous beneath, finely serrate, rounded at the base, the petioles pubescent; stipules small, caducous; fruiting ament oblong, dense; capsule ovate-lanceolate, smooth. — Rocky banks, West Florida, fruiting in April. — Shrub 8° – 12° high. Leaves thin, 2′ – 3′ long, Fruiting aments 2′ – 3′ long, 1′ in diameter, enveloped in the copious wool of the seeds. Flowers not seen.

5. **S. nigra,** Marshall. Leaves lanceolate, acute at each end, serrate, petioled, pubescent when young, becoming smoothish and green on both surfaces; stipules small and caducous, or sometimes lunate, toothed, and persistent; aments elongated, the fertile ones slender, loose-flowered; bracts deciduous; stamens 3 – 6, hairy below; capsule ovate, acuminate, pointed by the conspicuous style. — Swamps and muddy banks of rivers. A shrub or small tree, with brittle branches. Leaves 2′ – 3′ long, sometimes pubescent at maturity, like the branchlets. Fertile aments 3′ – 4′ long.

6. **S. fragilis,** L. Leaves broadly lanceolate, acuminate, finely serrate, white silky when young, glaucous beneath; aments long, cylindrical; bracts hairy; stamens mostly 2; capsule short-pedicelled. — Tennessee, and northward. — A small tree.

2. POPULUS, Tourn. COTTONWOOD, POPLAR, ASPEN.

Bracts of the aments toothed or lobed. Flowers from an oblique cup-shaped disk. Stamens few or numerous, with the filaments free. Stigmas elongated, 2-parted. — Trees. Leaves ovate or roundish, on long and often laterally compressed petioles. Buds covered with imbricated, often resinous-coated scales. Aments slender, drooping, appearing before the leaves.

1. **P. angulata,** Ait. Branches thick, smooth, and sharply angled; leaves large, smooth, deltoid-ovate, acute or slightly acuminate, truncate at the base, obtusely serrate with incurved teeth; the conspicuous veins and compressed petiole yellowish. — Banks of rivers. March – April. — A large tree. Leaves 6′ – 8′ long, longer than the petiole.

2. **P. grandidentata,** Michx. Branches terete; leaves round-ovate, acute, sinuate-toothed, hoary-tomentose when young, like the branchlets, at length smooth, scarcely longer than the slender compressed petiole; fruiting aments elongated, pubescent. — Low woods in the upper districts. March – April. — A middle-sized tree, with smooth gray bark. Leaves 3′ – 5′ long, and nearly of the same width.

3. **P. heterophylla,** L. Branches terete; leaves ovate, mostly obtuse, serrate, with obtuse, incurved teeth, rounded or with a small sinus at the base, hoary-tomentose on both sides when young, like the nearly terete petioles and branchlets, at length only on the veins beneath; fruiting aments smooth. — River swamps in the middle and upper districts. March – April. — A large tree. Leaves 3′ – 5′ long.

4. **P monilifera,** Ait. Branchlets obtusely angular; leaves deltoid-ovate, acuminate, serrate (3′ – 10′ long); fertile aments long and slender; stigma large, toothed; capsule oblong-ovate. — River banks, Florida, and northward. — A large tree.

ORDER 133. CASUARINACEÆ.

Trees or shrubs, with leafless jointed furrowed branches, like Equisetum. Flowers in spikes, monœcious or diœcious, the staminate ones in whorls at the joints, monandrous, 4-bracted, the pistillate flowers capitate, without floral envelopes. Ovary 1-celled, with 1 – 2 orthotropous ovules, forming in fruit a winged achenium. Styles 2. Albumen none. Radicle superior.

1. CASUARINA, Rumph.

Characters of the Order.

1. **C. equisetifolia,** Forst. Branches filiform, simple; furrows 6 – 8; teeth of the sheaths as many, keeled on the back; staminate spike terminal, the pistillate lateral, short-peduncled. — Keys of South Florida (*Curtiss*).

SUBCLASS II. GYMNOSPERMÆ.

Ovules naked (not enclosed in an ovary), commonly supported by an open scale or leaf, and fertilized by the direct application of the pollen. Cotyledons often more than two.

ORDER 134. CONIFERÆ. (PINE FAMILY.)

Trees or shrubs, with branching stems, composed of glandular or disk-bearing woody tissue without ducts, resinous juice, linear or needle-shaped mostly persistent leaves, and monœcious or diœcious amentaceous flowers. Calyx and corolla none. Ovules orthotropous. Fruit a cone or drupe. Embryo in the axis of the albumen. Cotyledons 2 or more.

Synopsis.

SUBORDER I. ABIETINEÆ. Fertile flowers consisting of numerous bracted imbricated carpellary scales, bearing two collateral inverted ovules at their base, and forming a cone in fruit. Buds scaly.

1. **PINUS. Leaves 2-5 in a cluster, mostly elongated, sheathed at the base.**
2. ABIES. Leaves single, short, destitute of a sheath. Cones erect, the scales deciduous.
3. TSUGA. Leaves single, flat. Cones declined, the scales persistent.
4. PICEA. Leaves single, 4-angled. Cones drooping. Anthers opening lengthwise.

SUBORDER II. CUPRESSINEÆ. Fertile flowers consisting of few bractless mostly peltate carpellary scales, bearing one or several erect ovules at their base, becoming fleshy or indurated, and forming in fruit a drupe or cone. Buds naked.

5. **JUNIPERUS. Fruit a drupe. Leaves minute, imbricated.**
6. **CHAMÆCYPARIS. Fruit a globular cone, with peltate scales. Leaves imbricated, persistent.**
7. **TAXODIUM. Fruit a globular cone, with peltate scales. Leaves spreading, on slender deciduous branchlets.**
8. **THUYA. Fruit an oblong cone, with imbricated oblong scales. Leaves minute, imbricated on the flattened branches, persistent.**

SUBORDER III. TAXINEÆ. Fertile flower solitary, without a carpellary scale. Fruit a drupe. Buds scaly.

9. **TAXUS. Drupe surrounded by a fleshy cup. Albumen homogeneous.**
10. **TORREYA. Drupe naked. Albumen ruminated.**

1. PINUS, Tourn. PINE.

Flowers monœcious. Sterile aments spiked or clustered. Stamens numerous on the axis, with very short filaments: anthers with a scale-like connective, 2-celled, opening lengthwise. Fertile aments single or clustered. Carpellary scales in the axils of deciduous bracts, each bearing two collateral inverted ovules at the base, indurated in fruit, and forming a cone; the apex commonly thickened, angular and spiny. Seeds nut-like, lodged in an excavation at the base of the scale, and furnished with a thin deciduous wing. Embryo in the axis of oily albumen. Cotyledons 3 – 12, linear. — Trees. Leaves evergreen, needle-shaped, 2 – 5 in a cluster, their bases enclosed in a thin scarious sheath.

* *Leaves two in each sheath.*

1. **P. pungens,** Michx. (TABLE-MOUNTAIN PINE.) Leaves from a short sheath, crowded, short and rigid; cones large, commonly 3 – 4 in a whorl, ovate, sessile, the thick scales pointed at the apex, and armed with a very stout spine, which on the upper scales is incurved, on the lower ones recurved. — Mountains, rarely west of the Blue Ridge, Georgia to North Carolina. — A tree 40° – 50° high, with rigid and irregular branches. Leaves about 2′ long. Cones 3′ long, yellowish brown. Buds resinous.

2. **P. inops,** Ait. (JERSEY OR SCRUB PINE.) Branchlets smooth and glaucous; leaves from short sheaths, scattered, short and rigid, flat on the inner face; cones solitary, conical-oblong, mostly reflexed, short-peduncled, deciduous; scales armed with a straight subulate rigid spine — Dry sandy or gravelly ridges in the upper districts. — A tree 15° – 30° high, with rough blackish bark, and spreading or recurved flexible branches. Leaves 1′ – 2′ long, dark green. Cones light brown, about 2′ long.

Var. **clausa,** Engelm. Leaves longer and finer; cones nearly sessile, spreading or reflexed, mostly persistent for years; bracts 8 or 9; cotyledons mostly 4. — Barren sandy ridges near the coast, Florida. — Tree 10° – 40° high. Wood valueless.

3. **P. glabra,** Walt. (SPRUCE PINE.) Branches and branchlets smooth, whitish; leaves slender, scattered; cones generally solitary, somewhat cylindrical; spines nearly obsolete. — In damp rich soil, Florida to South Carolina. — A tree 40° – 60° high, with smoothish bark and soft white wood, branching from near the ground. Leaves 3′ – 4′ long. Cones about 2′ long. "Wings of the seed lighter colored, more tapering, longer and less gibbous than those of P. mitis."

4. **P. mitis,** Michx. (SHORT-LEAVED PINE.) Leaves from a long sheath, crowded, very slender, concave on the inner face, dark green; cones small, mostly solitary, oval or conical-oblong; the thin scales flattened at the apex, and armed with a weak incurved spine. (P. variabilis, *Pursh.*) — Light clayey soil, Florida, and northward. — A large tree, with rough bark, and fine-grained valuable wood. Leaves 3′ – 5′ long, sometimes three in a sheath. Cones light brown, about 1½′ long, opening at maturity. Wings of the seed reddish.

* * *Leaves three in each sheath.*

5. **P. rigida,** Miller. (PITCH PINE.) Leaves crowded, from a very short sheath, rigid, flattened on the inner face; cones single or clustered, sessile, ovate, the scales armed with a short and rigid recurved spine. — Sandy barren soil in the upper districts. — A small or middle-sized tree, with thick blackish rugged bark, and hard resinous wood. Branches numerous, rigid, rough with the persistent bases of the leaf-bracts. Leaves 3′ – 5′ long. Cones 2′ – 3′ long, light-brown.

6. **P. serotina,** Michx. (POND PINE.) Leaves somewhat crowded, from a short sheath, elongated; cones mostly opposite, round-ovate, sessile; the scales rounded at the apex, and armed with a very small and weak spine. —

Borders of ponds and swamps in the lower districts. — A small tree, with rough bark and sappy valueless wood. Leaves 5′ - 8′ long. Cones 2′ - 3′ long.

7. **P. Tæda,** L. (LOBLOLLY or OLD-FIELD PINE.) Branches scaly; leaves from a long sheath, slender, elongated; cones large, solitary, oblong-conical, with the scales armed with a short and rigid straight spine. — Light mostly damp soil, Florida to North Carolina. — Commonly a lofty tree, with very thick and furrowed bark, and valuable but sparingly resinous wood; but in old fields low, with spreading branches. Leaves 6′ - 10′ long, rarely 2 or 4 in a sheath, dark green. Cones 3′ - 5′ long.

8. **P. Cubensis,** Griseb. Leaves 2 or 3 in each sheath, crowded at the end of the branches, 6′ - 9′ long, the angles serrulate; sterile aments clustered, cylindrical purple, the fertile single or whorled; cones reddish, recurved, conical-oblong, 4′ - 6′ long, armed with short stout spines. (P. Elliottii, Engelm.) — Low pine barrens, near the coast. — A middle-sized or large tree. Foliage dark green.

9. **P. australis,** Michx (LONG-LEAVED or YELLOW PINE.) Leaves very long, from long sheaths, crowded at the summit of the thick and very scaly branches; cones large, cylindrical or conical-oblong, the thick scales armed with a short recurved spine. — Sandy soil, constituting almost the entire growth of the pine barrens. — A lofty tree, with thin-scaled bark, and very valuable resinous wood, dividing near the summit into few spreading branches. Leaves 10′ - 15′ long. Leaf-bracts scarious, fimbriate. Cones 6′ - 10′ long.

* * * *Leaves five in each sheath.*

10. **P. Strobus,** L. (WHITE PINE.) Leaves slender, from a very short and deciduous sheath; cones long, cylindrical, recurved, with the loosely imbricated scales neither thickened nor spiny at the apex. — A tree of moderate dimensions on the mountains of Georgia and North Carolina, but northward one of the loftiest of trees, and greatly valued for its soft white wood Leaves 3′ - 4′ long. Cones 4′ - 6′ long.

2. ABIES, Link. FIR.

Cone erect, the scales deciduous at maturity. Seed free from the wings Anthers apiculate-recurved at the tip, opening transversely. — Leaves flat above, keeled beneath, single, short, spreading, distichous.

1. **A. Fraseri,** Pursh. (SILVER or BALSAM FIR.) Leaves somewhat distichous, linear, flattened, obtuse or emarginate, whitened beneath, the lower ones somewhat recurved, the uppermost erect; cone oblong-ovate; bracts long, oblong-wedge-shaped, short-pointed, reflexed at the summit. — High mountains of North Carolina. — A small tree. Leaves 6″ - 8″ long. Cones 1′ - 2′ long.

3. TSUGA, Carriere. HEMLOCK SPRUCE.

Cone drooping, the scales persistent. Seed adnate to the wing. Otherwise like the last.

1. **T. Canadensis,** Carr. (HEMLOCK SPRUCE.) Leaves distichous, flat, linear, obtuse, dark green above, whitened beneath; cones small, oval or

oblong, with the few scales smooth and entire. — High mountains of North Carolina. — A large tree, with the horizontal branches gradually diminishing upward, forming a pyramidal spire. Leaves ½′ long. Cones 8″ – 9″ long.

2. **T. Caroliniana,** Engelm. Leaves larger than in the preceding, 6″ – 8″ long, deeper green, and more glossy, notched at the tip; cones larger (12″ – 14″ long), the oblong scales widely spreading at maturity. — Mountains of North and South Carolina. — A small tree.

4. PICEA, Link. SPRUCE.

Cone drooping, the scales persistent. Seed at length free from the wing. Sterile aments axillary, sessile. Anthers opening lengthwise, crested at the tip. Leaves 4-angled, not distichous.

1. **P. nigra,** Link. (BLACK SPRUCE.) Leaves scattered on all sides of the branches, needle-shaped, 4-sided, erect, dark green; cone ovate or ovate-oblong; the scales with a thin wavy or denticulate margin. — High mountains of North Carolina, and northward. — A tall but slender tree. Leaves ½′ long, rigid. Cones 1′ – 1½′ long.

2. **P. alba,** Link. (WHITE SPRUCE.) Leaves inserted on all sides of the branches, needle-shaped, 4-sided, incurved, light green; cones oblong-cylindrical, with the scales entire. — High mountains of North Carolina, and northward. — A small tree, with more slender and less crowded leaves than those of the preceding. Cones 1′ – 2′ long.

5. JUNIPERUS, L. JUNIPER.

Flowers mostly diœcious. Aments lateral and terminal, small, few-flowered. Stamens several: anther-cells 3 – 6, inserted beneath the peltate scale, opening lengthwise. Carpellary scales 3 – 6, 1 – 3-ovuled, partly united, fleshy, and forming in fruit a berry-like drupe containing 1 – 3 erect bony seeds. Cotyledons 2, oblong. — Trees, with subulate or scale-like persistent leaves.

1. **J. Virginiana,** L. (RED CEDAR.) Branches terete; leaves opposite or by threes, minute, rhombic-ovate, closely imbricated, depressed on the back; those on young shoots subulate and spreading; drupes small, blue, 1 – 2-seeded. — Dry, rocky, or even wet soil, Florida, and northward. March. — A small tree, with reddish, fine-grained, durable, and odorous wood, and spreading branches. Leaves dark green.

2. **J. communis,** L. (COMMON JUNIPER.) Shrubby, widely spreading; leaves 3 in a whorl, spreading, linear-lanceolate, white on the upper surface, the margins involute; drupes large. — Aiken, South Carolina (*Ravenel*), and northward.

6. CHAMÆCYPARIS, Spach. CYPRESS.

Flowers monœcious. Aments terminal, few-flowered. Anther cells 2 – 4, inserted under the lower edge of the peltate scale, opening lengthwise. Carpellary scales peltate, bearing several erect ovules on their stalks, becoming woody in fruit, and forming a globular dehiscent cone. Seeds winged at each end. Cotyledons 2 – 3, obtuse. — Trees, with minute imbricated leaves.

1. **C. sphæroidea,** Spach. (WHITE CEDAR.) Branchlets compressed, crowded, distichous; leaves ovate, imbricated in 4 rows, with a roundish gland on the back; anther cells 2 under each scale; cones small. — Swamps, Florida, and northward. April. — A middle-sized tree with fibrous bark, and light durable wood. Branches spreading. Cones 3″–4″ in diameter, borne on short scaly stalks.

7. TAXODIUM, Richard. CYPRESS, BALD CYPRESS.

Flowers monœcious. Sterile aments small, in a long drooping spiked panicle. Scales peltate. Anther cells 2–5, opening lengthwise. Fertile aments single or by pairs, with the peltate scales 2-ovuled. Cone globular. Scales very thick, angular, slender-stalked, separating at maturity. Seeds 3-angled, wingless. Cotyledons 6–9, linear. — Trees, with distichous deciduous leaves.

1. **T. distichum,** Rich. Leaves alternate, opposite, or whorled, on very numerous short and slender deciduous branchlets, linear, acute, 2-ranked or imbricated. (Cupressus disticha, *L.*) — Ponds and deep swamps in the lower districts. Feb.–March. — A very large tree, with pale smoothish bark, light durable wood, and few fastigiate branches at the summit. Leaves 4″–6″ long. Cones ¾′–1′ in diameter. Attached to the roots are hollow conical knobs called Cypress-Knees.

8. THUYA, Tourn. ARBOR-VITÆ.

Flowers monœcious. Aments small, terminal. Anther cells 4, with a scale-like connective. Carpellary scales imbricated in four rows, with two erect ovules at the base. Cone oblong, the few scales imbricated, expanding at maturity, persistent. Seed winged. Cotyledons 2, oblong. — Trees or shrubs, with scale-like imbricated persistent leaves.

1. **T. occidentalis,** L. (ARBOR-VITÆ.) Branches flat, distichous; leaves ovate, obtuse, with a gland on the back, imbricated in four rows; cones oblong, nodding, with the outer scales oblong, obtuse; seeds broadly winged, emarginate at each end. — Rocky banks on the mountains of Carolina, and northward. — A small or middle-sized tree. Cones ½′ long.

9. TAXUS, Tourn. YEW.

Flowers diœcious, axillary; the sterile ones in globular few-flowered aments. Anther cells 3–8, inserted under the peltate scale. Fertile flowers solitary, scaly-bracted, consisting of a single ovule on a cup-shaped disk, which becomes large and berry-like in fruit, and surrounds the nut-like seed. Embryo in the axis of mealy albumen. — Trees or shrubs, with scattered branches, linear rigid distichous leaves, and scaly buds.

1. **T. Floridana,** Nutt. Leaves narrowly linear, mucronate, conspicuously petioled (about 9″ long), the outer margin revolute; fruit not abundant; the fleshy disk of the seed bright red. — Low ground along the east bank of the Apalachicola River, Middle Florida. — A small tree 10°–20° high.

10. TORREYA, Arnott.

Flowers diœcious, axillary; the sterile ones in globose or oblong aments. Anther cells 4, inserted under the peltate scale. Fertile flowers solitary, consisting of a solitary ovule surrounded with imbricated persistent scales. Disk none. Seed large, ovoid, naked. Embryo at the apex of hard ruminated albumen. Cotyledons 2, linear. — Trees, with whorled branches. Leaves distichous, rigid, persistent. Buds scaly.

1. **T. taxifolia,** Arn. Branchlets opposite, 2-ranked; leaves linear, spiny-pointed, nearly sessile, light green; sterile aments yellow, crowded; seed ovoid, drupe-like. — Rich soil, along the east bank of the Apalachicola River, Middle Florida. March. — A middle sized tree, with durable strong scented wood, and horizontal branches. Leaves very rigid, and pungent, 1′ long. Seed smooth and glaucous, similar in shape and size to a nutmeg.

ORDER 135. CYCADACEÆ. (CYCAS FAMILY.)

Trees or shrubs, with simple trunks, increasing by a terminal bud, like the Palms, and composed of a large pith, mixed with woody bundles or plates, enclosed in a cylinder of woody fibre and spiral vessels. Leaves pinnate, coiled in the bud, like Ferns. Flowers diœcious, destitute of calyx and corolla. Sterile flowers consisting of 1-celled anthers inserted under the peltate scales of a cone-like ament. Fertile flowers consisting of naked ovules inserted under the scales like the sterile flowers, or on the margins of contracted leaves. Seed nut-like. Embryo in the axis of the albumen. Radicle ending in a long spiral cord. Cotyledons 2.

1. ZAMIA, L.

Flowers in cone-like aments, with the peltate scales inserted on all sides of the common rachis. Anthers numerous. Ovules by pairs, pendulous. Seed roundish, drupe-like. — Leaflets thickened at the base and articulated with the petioles, with numerous simple veins.

1. **Z. integrifolia,** Willd. (COONTIE.) Stem short, globular or oblong; leaves petioled, spreading, with the numerous lanceolate or linear-lanceolate leaflets entire, or serrate near the apex; aments oblong, obtuse, short-peduncled. — Low grounds. South Florida. — The stem abounds in starch, from which the Florida Arrowroot is obtained.

CLASS II. MONOCOTYLEDONOUS OR ENDOGENOUS PLANTS.

Stems composed of cellular tissue and scattered bundles of woody fibre and vessels, destitute of proper pith, bark, or concentric layers, and increasing in diameter by the deposition of new fibrous bundles. Leaves mostly alternate, entire, and parallel-veined, commonly sheathing at the base, seldom falling off by an articulation. Floral envelopes usually by threes. Cotyledons single.

ORDER 136. PALMÆ. (PALMS.)

Chiefly trees, with a thick woody stem (caudex), growing by a terminal bud, pinnate or fan-shaped leaves, which are plaited in the bud, and a spadix of small perfect or polygamous flowers. Sepals and petals 3, free or more or less united, persistent. Stamens mostly 6, hypogynous or perigynous: anthers 2-celled, introrse. Ovary 1-3-celled, commonly with a single erect orthotropous or anatropous ovule in each cell. Styles 1-3: stigmas entire. Fruit a drupe or berry. Embryo cylindrical, placed in a cavity of the hard albumen, near the circumference of the seed. — Stems erect or creeping. Leaves long-petioled. Spadix axillary.

Synopsis.

*** Leaves fan-shaped.**

+ Petioles smooth. Stem simple.

1. **SABAL.** Ovary 3-celled. Stigma obtuse. Flowers sessile.
2. **THRINAX.** Ovary 1-celled. Stigma funnel-shaped. Flowers pedicelled.

+ + Petioles spiny or denticulate. Stem branching.

3. **SERENOA.** Petioles compressed, spiny. Petals valvate. Drupe naked.
4. **RAPHIDOPHYLLUM.** Petioles triangular, denticulate. Petals imbricate. Drupe woolly.

*** * Leaves pinnate.**

5. **OREODOXA.** Spadix included. Drupe single, baccate.
6. **PSEUDOPHŒNIX.** Spadix large, paniculate. Drupes 1-3, scarlet.
7. **COCOS.** Spadix branching. Drupe very large, woody. Albumen hollow.

1. SABAL, Adans. PALMETTO.

Flowers perfect. Calyx cup-shaped, 3-cleft. Corolla 3-petalled. Stamens 6, hypogynous; the filaments subulate, distinct. Anthers cordate-ovate. Ovary 3-celled. Styles united; stigma capitate or obtuse. Fruit a 1-seeded drupe. Embryo dorsal. Albumen homogeneous, horny. — Stem erect or creeping. Leaves fan-shaped, with the divisions 2-cleft at the apex and with long thread-like filaments interposed. Spadix long, branching, with sheathing spathes at the joints. Flowers rigid. Drupe globose. Sheaths of the leaves dissolved into a net-work of interlaced fibres.

1. **S. Palmetto,** R. & S. (CABBAGE PALMETTO.) Stem erect; leaves cordate in outline, recurved at the summit, shorter than the petiole; the divisions deeply cleft; spadix spreading, commonly shorter than the leaves; petals slightly united at the base; style thick. — Low ground along the coast. June. — Stem 20° - 40° high. Leaves 5° - 8° long. Drupe black, 4‴ - 5‴ in diameter.

2. **S. Adansonii,** Guerns. (DWARF PALMETTO.) Stem short, buried in the earth; leaves circular in outline, glaucous, longer than the petiole; the divisions slightly cleft at the apex; spadix erect, much longer than the leaves; petals united at the base; style thick. — Low grounds in the lower districts. June - July. — Leaves 2° - 3° high. Spadix 3° - 6° high. Drupe 4‴ in diameter, black. Nut hemispherical.

Var.? **megacarpa,** Chapm. Leaves grayish green, the divisions parted nearly to the sinuses; spadix (2° long) ascending, prostrate in fruit; drupe (⅓′ in diameter) black; flowers not seen. — Dry rocky pine woods, Miami, South Florida (*Garber*).

2. THRINAX, L. f. SILVER PALM.

Flowers perfect. Calyx cup-shaped, 6-toothed. Petals none. Stamens 6 - 12, their subulate filaments connate at the base. Anthers linear. Ovary 1-celled, 1-ovuled. Stigma funnel-shaped. Drupe globose. Albumen entire, or lobed from the base. Embryo vertical. — Leaves fan-shaped, the divisions mostly destitute of interposed filaments. Spadix paniculate.

1. **T. argentea,** Lodd. Stem slender; leaves circular, silvery-silky beneath, the numerous divisions 2-cleft, united near the base, shorter than the petiole; ligule rounded; spadix much shorter than the leaves, simply paniculate; flowers short-pedicelled; stamens 9 - 12; drupe small; albumen 4 - 6-lobed. — Keys of South Florida. — Stem 12° - 15° high. Leaves 2° long. Spadix 1° long. Drupe 3‴ in diameter.

Var. **Garberi.** Stem very short; divisions of the leaves linear-strap-shaped, nearly entire; drupe deep purple. — Rocky pine woods, Miami, South Florida. — Spadix 6′ - 8′ high.

2. **T. parviflora,** Swartz. Stem smoothish; leaves canescent, scurfy beneath, glabrate, the divisions longer than the petiole, the lower third united, long-tapering to the 2-cleft apex: ligule triangular; spadix large, much branched; stamens 6; albumen entire; embryo nearly vertical. — Keys of South Florida. — Stem 10° - 20° high. Leaves 2° - 3° long. Drupe 2‴ in diameter.

3. SERENOA, Hook. f. SAW PALMETTO.

Inflorescence as in Sabal. Calyx cup-shaped, 3-toothed. Petals valvate, 2-keeled within, connate at the base. Stamens 6. Anthers ovate, erect. Ovaries separate. Styles slender, united. Drupe 1-seeded. Embryo near the base of homogeneous albumen.

1. **S. serrulata,** Hook. f. (SAW PALMETTO.) Stem creeping, branching; leaves circular in outline, fan-shaped, shorter than the slender spiny-

edged petiole; the divisions slightly cleft at the apex, and without thread-like filaments; spadix densely tomentose, much shorter than the leaves; drupe ovoid-oblong. — Sandy soil in the lower districts. June. — Stem 4° – 8° long. Leaves 2° – 4° high. Drupe black, 8″ – 9″ long.

4. RAPHIDOPHYLLUM, H. Wendl.

Flowers polygamous, crowded on the short branching spadix, sessile. Calyx 3-parted. Petals 3, round-ovate, imbricate. Stamens 6, inserted on the base of the petals. Anthers linear. Ovaries 3 – 5. Stigma small, spreading. Drupes 1 – 3, ovoid, woolly, 1-seeded. Embryo dorsal, in homogeneous albumen.

1. **R. Hystrix,** H. Wendl. (Blue Palmetto.) Stem short, proliferous; leaves circular in outline, with numerous 2 – 4-toothed divisions, on triangular rough-edged petioles; sheaths composed of oblique fibres interwoven with numerous erect strong spines; spadix small, short-peduncled; spathes about 4, oblong, woolly, 2-lipped; drupe ovoid. — Low shady woods in the lower districts, Florida to South Carolina. June – July. — Stem 2° – 3° long, erect or creeping. Leaves somewhat glaucous, 3° – 4° high. Spadix 6′ – 12′ long. Partial spathes none. Drupe 9″ – 12″ long.

5. OREODOXA, Willd.

Flowers monœcious, sessile, bracted. Sepals 3, imbricated, at length united. Petals 3, valvate. Stamens 6, 9, or 12. Ovary 3-celled. Stigmas 3, sessile. Drupe baccate. Embryo at the base of horny albumen. — Tall Palms, with long pectinate-pinnate long-sheathing leaves.

1. **O. regia,** HBK. (Royal Palm.) Stem 60° – 100° high; leaves 10° – 15° long, the narrowly lanceolate divisions acuminate, 1° long; drupe oblong, dark blue. — On Roger's River, east of Caximbas Bay, and sparingly near the mouth of Little River, South Florida (*Garber*).

6. PSEUDOPHŒNIX, H. Wendl.

Fruit stipitate, drupaceous, composed of one globose carpel, with the remains of the stigma basal, or of 2 – 3 carpels with the stigma lateral or central. Pericarp coriaceous, endocarp thin, crustaceous. Seed free, globular, erect; hilum basal; raphe ascending, branching; albumen entire; embryo basal. Calyx 3-toothed. Corolla 3-petalled. Stamens 6. (*Wendland.*)

1. **P. Sargenti,** H. Wendl. Stem 20° – 25° high; leaves abruptly pinnate 4° – 5° long, the segments rigid, glaucous beneath, 12′ – 16′ long; spadix branching; fruit orange-scarlet, ½′ – ¾′ in diameter. — Elliott's and Long Keys, South Florida.

7. COCOS, L.

Flowers monœcious. Sepals and petals 3. Stamens of the sterile flower 6, the filaments subulate. Sepals and petals of the fertile flower roundish. Ovary 1-celled. Stigmas 3. Nut bony, with 3 pores at the base, enclosed in a thick fibrous husk. Albumen hard or fleshy, hollow. Embryo basal. — Tall palms, with pinnate leaves, and small greenish or yellowish flowers.

1. **C. nucifera,** L. (COCOA.) Stem 40° – 60° high; leaves very long, the divisions narrowly lanceolate; spathe deeply grooved; spadix long, branching; nut very large, ovate. — South Florida. Introduced.

ORDER 137. ARACEÆ. (ARUM FAMILY.)

Chiefly acrid stemless herbs, from tuberous or creeping rootstocks, with entire or divided often veiny leaves, and perfect or monœcious flowers borne on a spadix, and commonly enclosed in a spathe. — Calyx and corolla wanting, or the former with scale-like sepals. Stamens short, hypogynous: anthers extrorse, commonly sunk in the thick connective. Ovary 1 – several-celled, with 1 – several ovules in each cell. Stigma sessile. Fruit fleshy, indehiscent. Embryo straight. Albumen mealy or fleshy, sometimes wanting.

Synopsis.

*** Calyx and corolla none. Spadix enclosed in a spathe. Flowers monœcious.**

+ Fertile flowers numerous. Spadix free.

1. **ARISÆMA.** Spadix barren above. Leaves 3 – several-lobed.
2. **PELTANDRA.** Spadix flowering throughout. Leaves sagittate.

+ + Fertile flowers solitary. Spadix adnate to the spathe.

3. **PISTIA.** Free-floating aquatics. Fertile flowers solitary.

*** * Calyx manifest. Flowers perfect.**

+ Spadix enclosed in a spathe.

4. **SYMPLOCARPUS.** Spathe thick and fleshy, convolute, pointed. Spadix globular. Sepals and stamens 4.

+ + Spadix naked.

5. **ORONTIUM.** Spadix terminating the club-shaped white-topped scape.
6. **ACORUS.** Spadix attached to the side of the flattened leaf-like scape.

1. ARISÆMA, Mart. INDIAN TURNIP.

Spathe convolute below, dilated and commonly arched above, withering. Spadix covered below with monœcious or diœcious flowers (the lower ones fertile), elongated and naked above. Calyx and corolla none. Stamens 4 in a whorl, very short: anther cells 2 – 4, distinct, opening at the top. Ovary 1-celled, with 5 – 6 erect orthotropous ovules. Stigma sessile. Fruit a 1 – few-seeded scarlet berry. Embryo in the axis of mealy albumen. — Root tuberous. Petioles of the commonly divided and veiny leaves elongated and sheathing the scape. Fruit clusters naked.

1. **A. triphyllum,** Torr. (WAKE-ROBIN.) Leaves two, trifoliate; leaflets sessile, oblong-ovate, acuminate; spathe tubular, dilated, and incurved above, acuminate, green, or variegated with white and purple, longer than the club-shaped obtuse often diœcious spadix. — Low rich woods. March. — Plant 1° – 1½° high. Leaflets 3′ – 6′ long. Root depressed, rugose, intensely acrid.

2. **A. quinatum.** Leaves single and 3-foliate, or two, and the lower one 3-foliate, the other subquinate; leaflets elliptical, acute; spathe acute;

spadix slender, tapering to the obtuse apex. — Shaded rich soil on the mountains of Georgia and North Carolina. May. — Plant 2°–3° high. Root depressed. Leaflets 4′–6′ long. Flowers diœcious.

3. **A. Dracontium,** Schott. (DRAGON-ROOT.) Leaf solitary, pedately 9–13-foliate; leaflets petioled, entire, lanceolate or oblong, acuminate; spathe tubular (green), concave and erect above, much shorter than the very slender spadix. — Rich woods. March–April. — Plant 1°–1½° high. Berries numerous on the flat rachis, 1–3-seeded.

2. PELTANDRA, Raf. ARROW ARUM.

Spathe convolute, persistent at the base. Spadix wholly covered by the monœcious flowers. Calyx and corolla none. Anther cells 5–6, embedded in the thick peltate connective, opening by a terminal pore. Ovary 1-celled, with several orthotropous ovules. Berry 1–3-seeded. Seed gelatinous, without albumen. Embryo large. Plumule conspicuous, curved. — Stemless marsh herbs from a tuberous rhizoma. Leaves sagittate, with the petiole sheathing the base of the thick scape. Fruit-clusters enclosed in the persistent base of the spathe.

1. **P. undulata,** Raf. Leaves several, oblong, acute, the lobes obtuse; spathe green, lanceolate, acute, convolute, longer than the cylindrical spadix; berries green, in a globose cluster, 1-seeded. — Marshes and wet places. April–May. — Plant 1° high. Spathes 2′–4′ long.

2. **P. alba,** Raf. Leaves few, oblong, acuminate, glaucous, the lobes obtuse; spathe oval, white, half convolute above the green persistent base, twice or thrice the length of the spadix; berry 1-seeded, crimson. — Sphagnous bogs along the coast, Florida to North Carolina. May–June. — Plant 12′–15′ high. Leaves 3′–5′ long. Spathe 2′–3′ long.

3. PISTIA, L.

Spathe tubular at the base, spreading above, united with the spadix. Flowers few, monœcious, the upper ones staminate and supported by a cup-shaped involucre; the fertile solitary. Calyx and corolla none. Anther cells 3–8, opening transversely. Ovary 1-celled, with several erect orthotropous ovules. Style thick: stigma disk-like. Berry few–many-seeded. Embryo at the apex of the albumen. — Small free-floating aquatic herbs, with fibrous roots, and entire clustered spreading leaves, with the flowers in their axils.

1. **P. spathulata,** Michx. Leaves arranged in a circle, wedge-obovate, abruptly contracted into a short petiole, with the nerves projecting beneath (lamelliform); stem copiously rooting at the joint; spathe short-peduncled, white. — In still water, East Florida, and westward. — Leaves 1′–4′ long.

4. SYMPLOCARPUS, Salisb. SKUNK CABBAGE.

Spathe hooded-shell-form, acuminate, fleshy, early decaying. Spadix peduncled, globose, covered with the perfect flowers. Sepals 4, hooded, berry-like in fruit. Corolla none. Stamens 4: anthers 2-celled, opening lengthwise. Ovary 1-celled, 1-ovuled. Style pyramidal, 4-angled; stigma minute. Berries with the sepals united in a mass. Seeds globose, without albumen. Embryo thick and fleshy. — Perennial garlic-scented herbs, from a deep and thick rhizoma, with large stout-petioled veiny leaves, and nearly sessile spathes, appearing before the leaves.

1. **S. fœtidus,** Salisb. Leaves thin, oval, cordate, short-petioled; spathe ovate, incurved, spotted with purple and yellow; spadix dull purple, much shorter than the spathe, enlarged in fruit. — Bogs and swamps, North Carolina, and northward. Feb. – March. — Leaves 1° – 2° long. Spathe 2′ – 4′ long. Spadix in fruit 2′ – 3′ in diameter. Seeds about the size of a pea.

5. ORONTIUM, L. Golden-Club.

Spathe none. Spadix cylindrical, covered with the yellow perfect flowers. Sepals and stamens 4 – 6. Anthers 2-celled, opening lengthwise. Ovary 1-celled, with a single amphitropous ovule. Stigma minute, sessile. Fruit green. Seed without albumen. Embryo thick and fleshy. — A perennial aquatic herb, with oblong long-petioled leaves, and a yellow erect spadix terminating the club-shaped scape.

1. **O. aquaticum,** L. Rhizoma deep, fleshy; leaves acute, nerved, on stout terete petioles; scape terete, thickened upward, white beneath the spadix, sheathed below, commonly curved. — Ponds and slow-flowing streams. March – April. — Leaves about 1° long. Scape 1° – 2° long. Spadix 1′ – 2′ long; the upper flowers mostly tetrandrous.

6. ACORUS, L. Calamus, Sweet Flag.

Scape flattened, leaf-like, with the lateral sessile spadix covered with the perfect flowers. Spathe none. Sepals and stamens 6. Corolla none. Filaments slender: anthers kidney-shaped, 1-celled, opening transversely. Ovary 2 – 3-celled, with several orthotropous suspended ovules in each cell. Stigma minute. Fruit dry, gelatinous within, 1 – few-seeded. Embryo in the axis of the albumen. — Perennial herbs, from a creeping aromatic rhizoma. Leaves erect, long, flattened, 2-edged. Scape leaf-like, elongated above the spadix.

1. **A. Calamus,** L. — Wet places, apparently introduced. April. — Rhizoma rather slender, pungent. Leaves 1° – 2° high, linear-lanceolate. Scape narrower than the leaves. Spadix cylindrical, yellowish, 2′ – 3′ long, spreading.

Order 138. LEMNACEÆ. (Duckweed Family.)

Minute aquatic floating plants, with lenticular proliferous stems (fronds), and usually simple roots, pendent from beneath. Flowers monœcious, mostly from a marginal cleft of the stem. Spathe membranaceous, pitcher-shaped, bursting into two unequal lobes, soon vanishing, commonly enclosing two sterile flowers, which are reduced to single slender filaments bearing a 2-celled anther, and a single sessile 1-celled ovary, which forms in fruit a 1 – 7-seeded utricle. Embryo straight, in the axis of fleshy albumen.

1. LEMNA, L. Duckweed.

Spathes marginal, 3-flowered. Anthers opening transversely. Stigma funnel-form. Ovules erect from the base of the cell. — Stems increasing by lateral buds. Roots terminating in a calyptra-like appendage. — The flowers of these plants are seldom seen.

§ 1. *Root single: ovule solitary, half anatropous, or orthotropous.* — Lemna.

1. **L. trisulca,** L. Frond thin, lanceolate-oblong, denticulate near the apex, slender-stiped, compoundly proliferous, mostly in threes, 1-nerved, 3″–9″ long; seed half anatropous. — Mountains of North Carolina?

2. **L. Valdiviana,** Philippi. Fronds short-stiped, oblong, thin, faintly 1-nerved, commonly in groups of 4–8, 1″–2″ long; utricle long-ovate, about half as long as the frond, pointed by the long style; seed orthotropous, apiculate; albumen scanty. — Ponds, etc., Florida, and northward.

3. **L. minor,** L. Stems pale, round-obovate, flattened, single or variously clustered; root single; ovule solitary, half anatropous; seed horizontal. — Pools, ditches, etc., Florida, and northward, probably intermixed with L. perpusilla, *Torr.* — Stems 1″–2″ long.

§ 2. *Roots several, clustered: ovules* 2, *anatropous.* — Spirodela.

4. **L. polyrhiza,** L. Stems roundish or obovate, flat and pale above, convex and dark purple beneath, clustered; roots numerous, clustered; ovules 2. — Ponds, Florida, and northward. — Less common than the preceding. Stems 2″–4″ long.

2. WOLFFIA, Horkel.

Spathe central, 2-flowered. Anther 1-celled, opening lengthwise. Stigma depressed. Ovule oblique, orthotropous. Utricle globular. Albumen thin. — Fronds without roots or nerves, coarsely cellular, proliferous.

1. **W. Columbiana,** Karsten. Very minute, roundish, lenticular, deep green, with a thin appendage at the base. — Floating with *Lemna* on still water.

2. **W. gladiata,** Hegelm. Frond ribbon-shaped, curved or falcate, gradually narrowed to the obtuse apex, thin and transparent, 2″–4″ long, ¼″ wide. — Floating in dense mats in ponds, Cedar Keys, Florida.

Order 139. TYPHACEÆ. (Cat-tail Family.)

Simple-stemmed marsh herbs, with elongated strap-shaped nerved leaves, and monœcious flowers, on a globular or cylindrical spadix, destitute of floral envelopes, but enveloped in copious pappus-like hairs or scales. Spathe bract-like or none. Anthers single or 2–4 together, on long and slender filaments. Ovary 1-celled, with a single suspended anatropous ovule. Style slender. Fruit nut-like. Embryo straight in copious albumen. — Sterile spadix placed above the fertile, continuous or distant.

1. TYPHA, Tourn. CAT-TAIL.

Flowers densely crowded on a long cylindrical terminal spadix, enveloped in copious pappus-like hairs; the sterile ones sessile on the upper part of the spadix, the fertile on slender stalks. Style filiform: stigma lateral. — Stems straight, from a thick rhizoma, clothed below with the sheathing bases of the elongated linear leaves. Spathes bract-like and deciduous, or none.

1. **T. latifolia,** L. Stem terete, jointed below; leaves nearly as long as the stem, erect, flat, reticulated and somewhat glaucous; sterile and fertile portions of the spadix contiguous, cylindrical. — Margins of ponds and rivers, Florida, and northward. July – August. — Stem 4° – 6° high, scape-like above. Leaves about 1′ wide. Spadix about 1° long. — T. angustifolia, *L.*, if found within our limits, may be known by narrower leaves which are channelled near the base, and by the interval which separates the sterile and fertile portions of the spadix.

2. SPARGANIUM, L. BUR-REED.

Flowers densely crowded in globular heads, surrounded by several scales like a calyx; the upper heads sterile, naked, the lower fertile and commonly bracted. Ovary sessile, pointed by the short persistent style. Stigma lateral. — Marsh or aquatic plants, with erect stems, and long strap-shaped sessile leaves, the lowest sheathing. Heads of flowers scattered.

1. **S. simplex,** Huds. Leaves flat, obtuse, the upper concave and clasping, the lower sheathing; heads scattered, the lowest larger and pistillate, the others staminate; scales wedge-shaped; stigma subulate, simple. — Ponds and ditches. July. — Stem 1° – 2° high. Heads 6″ – 10″ broad.

ORDER 140. NAIADACEÆ. (PONDWEED FAMILY.)

Aquatic herbs, with slender jointed leafy immersed stems, and perfect or monœcious or diœcious flowers, destitute of floral envelopes, or with scale-like sepals. Stamens 1 – 4: anthers 1 – 4-celled. Ovary 1-celled, forming a 1-seeded achenium in fruit. Stigmas 1 – 4. Seed without albumen. Embryo straight, curved, or coiled. — Leaves sheathing, or with sheathing stipules. Flowers commonly enclosed in a spathe.

Synopsis.

* Flowers monœcious or diœcious.

1. NAIAS. Stigmas 2 – 4. Flowers naked. Leaves opposite or whorled.
2. ZOSTERA. Stigmas 2. Flowers enclosed in a spathe. Leaves alternate.
3. ZANNICHELLIA. Stigma single, peltate. Ovaries 4, from a cup-like involucre.
4. THALASSIA. Flowers diœcious. Sepals 3 Anthers 9, sessile.

* * Flowers perfect.

5. RUPPIA. Fruit long-peduncled, umbellate. Calyx and corolla none.
6. POTAMOGETON. Fruit sessile, spiked. Calyx 4-leaved.

1. NAIAS, L.

Flowers monœcious or diœcious, axillary, sessile, destitute of calyx and corolla. Sterile flower monandrous, enclosed in a spathe. Anther 4-celled, opening at the apex, the filament lengthening. Fertile flower naked; the sessile ovary pointed with the slender style. Stigmas 2 – 4, subulate. Ovule erect. Achenium minute. Embryo straight. Radicle inferior. — Stems fili form, forking. Leaves opposite or whorled, linear, dilated into a short sheath at the base. Flowers solitary, minute.

1. **N. flexilis,** Rostk. Stem immersed (1° – 2° long); leaves 3 in a whorl, narrow-linear, membranaceous, spreading, minutely denticulate on the margins, the lower ones often remote; stigmas 3 – 4; achenium elliptical, acute, smooth, yellowish. — In ponds and still water, South Carolina, and northward. July – August. — Leaves about 1′ long.

2. **N. microdon,** A. Braun. Stem (6′ – 12′ long) almost capillary, very leafy throughout; leaves opposite, approximate, spreading or recurved (2″ – 4″ long); achenium narrowly spindle-shaped, finely reticulated, brownish. — Fresh or brackish water along the coast, West Florida. July – August.

3. **N. major,** All. Stem muricate; leaves broadly linear, serrate-dentate, with muricate teeth, the sheaths entire; flowers diœcious; anthers 4-valved; style very short; stigmas 3; achenium elliptical, obscurely reticulate. — South Florida.

2. ZOSTERA. L. EEL-GRASS.

Flowers monœcious, naked; the sterile and fertile ones alternately arranged on the anterior edge of a flattened membranaceous spadix, and enclosed in the sheath-like base of the leaves. Anthers oblong, 1-celled, filled with fine filaments instead of pollen grains. Ovary fixed near the apex, containing a single pendulous orthotropous ovule, and pointed with the subulate persistent style. Stigmas 2, capillary. Utricle bursting irregularly. Seeds striate. Cotyledons inflexed-curved, received in a longitudinal cleft of the embryo. — Marine herbs, with creeping stems, and narrowly linear obtuse and elongated sheathing leaves.

1. **Z. marina,** L. Stem slender, terete, jointed; leaves thin and tender, faintly 3 – 5-nerved; flowers in two rows on the linear spadix. — Deep salt-water coves. West Florida, and northward. August – Sept.

3. ZANNICHELLIA, L.

Flowers monœcious, axillary. Sterile flower consisting of a solitary naked filament bearing a 2 – 4-celled anther. Fertile flower from the same axil, composed of 2 – 6 sessile 1-celled ovaries, surrounded by a cup-shaped involucre, and pointed with the slender style. Stigma obliquely peltate. Ovule suspended, orthotropous. Achenium oblong, stalked. Embryo slender, coiled. — Submerged aquatic plants, with filiform branching stems, and very narrow and entire alternate leaves, with sheathing stipules.

1. **Z. palustris,** L. Stems tufted; leaves acute, 1-nerved; anther 2-celled; achenia 3 – 6 in a cluster, linear-oblong, commonly short-peduncled. — Fresh or brackish water, Florida, and northward. May – August. — Stems 1° – 3° long. Leaves 1′ – 2′ long.

4. THALASSIA, Soland.

Flowers diœcious. Spathe of the sterile flower terminating the scape, 2-cleft, the lobes obtuse. Sepals 3, ovate-oblong, obtuse. Anthers 9, sessile, shorter than the calyx, connivent. Fertile flowers unknown. — Marine herbs, with linear sheathing leaves surrounding the central scape.

1. **T. testudinum,** Koenig. Immersed; stem creeping; leaves 1° long, the outer ones withering-persistent. — Shallow water along the coast of Florida.

5. RUPPIA, L. Ditch-grass.

Flowers perfect, naked, two or more on a slender spadix, enclosed in the spathe-like sheaths of the leaves, but soon long-exserted. Stamens 2, closely sessile: anther-cells large, distinct. Ovaries 4, sessile, containing a single suspended campylotropous ovule. Stigma peltate. Achenium stalked, obliquely ovate. Embryo pointed by the short plumule. — Salt-water herbs, with filiform branching stems, and alternate linear or bristle-like sheathing leaves.

1. **R. maritima,** L. — In shallow water, along the coast. May – August. — Stems immersed, 1° – 3° long, mostly creeping at the base. Leaves filiform, 1′ – 3′ long, with dilated membranaceous sheaths. Fruiting peduncles 1′ – 4′ long. Achenium pointed.

6. POTAMOGETON, Tourn. Pondweed.

Flowers perfect, spiked. Sepals 4, roundish, valvate in the bud. Stamens 4, opposite the sepals: filaments short: anthers 2-celled. Ovaries 4, sessile. Ovules ascending, campylotropous. Style short or none: stigma peltate. Achenia 1 – 4, compressed. Embryo curved or coiled. — Aquatic herbs, with immersed slender and jointed stems. Leaves stipulate, alternate and opposite, either all immersed and commonly membranaceous, or the upper ones floating and more rigid. Spikes peduncled, axillary and terminal.

* *Leaves all immersed and alike.*

+ *Leaves filiform.*

1. **P. pectinatus,** L. Stem flexuous; the branches diffusely forking, distichous; leaves long, thickish, slightly channelled, approximate on the branches; stipules small, united with the long and sheathing base of the leaves; spikes slender, interrupted, on long filiform peduncles; achenium obovate, smooth, slightly compressed, keeled on the back. — Fresh or brackish water. June – August. — Stems 2° – 3° long. Leaves 3′ – 4′ long. Spikes 1′ – 2′ long.

2. **P. pauciflorus,** Pursh. Stem very slender, flattened, sparingly branched; leaves scattered, thin, 3-nerved, sessile; stipules free from the leaves, connate, sheathing; spikes short-peduncled, 4 – 6-flowered, globose in fruit; achenium round-obovate, short-pointed, keeled and sinuate-toothed on the back. — Shallow ponds, Georgia, and northward. July – August. — Stem 1° – 2° long. Leaves 1′ – 2′ long. Peduncles ½′ – 1′ long.

3. **P. pusillus,** L. Stem filiform, slightly compressed; leaves narrowly linear, acute or acuminate, biglandular at the base; stipules free; peduncles half as long as the leaves, 4-8-flowered; achenia obliquely obovate, turgid, rounded on the back; embryo hooked at the apex. — Ponds, North Carolina, and northward.

+ + *Leaves lanceolate or cordate: stipules free, sheathing.*

4. **P. perfoliatus,** L. Stem terete, branching, very leafy; leaves ovate, cordate, clasping, obtuse, many-nerved, those at the branches and peduncles opposite; spikes lateral and terminal, oblong, densely many-flowered, on stout peduncles 2-3 times as long as the leaves; achenium obliquely obovate, rounded on the back, short-pointed. — Fresh or brackish water, West Florida, and northward. July-Sept. — Stems 1°-2° long. Leaves 6″-8″ long.

5. **P. lucens,** L. Stem branching; leaves short-petioled, oblong-lanceolate, mucronate-acute; stipules long, connate; peduncles stout, longer than the leaves; achenia roundish, compressed, slightly 3-keeled. — Lakes and ponds, Florida (?), and northward.

6. **P. Zizii,** Mert. & Koch.? Stems sparingly branched; leaves lanceolate, acute, contracted and sessile at the base, pellucid, 5-9-nerved, wavy on the margins; stipules (white) connate, rounded on the back; spikes cylindrical, many-flowered, on stout peduncles shorter than the leaves; achenium (immature) oval, compressed, rounded on the back, short-pointed. — Fresh water, Apalachicola, Florida. August. — Stems 2°-3° long. Leaves 2′-3′ long.

* * *Leaves of two forms; the immersed ones thin and pellucid, the floating ones long-petioled and somewhat coriaceous.*

7. **P. amplifolius,** Tuck. Stem simple, floating; leaves (mostly absent) large, oblong or oval-lanceolate, acutish, long-petioled; the submerged ones lanceolate, undulate; stipules very long, pointed; peduncles stout, fruit obliquely obovate, bluntly keeled. — Ponds on the mountains of Georgia, and northward.

8. **P. Pennsylvanicus,** Cham. Stem slender, branching; floating leaves opposite, thin, elliptical or oblong-linear, on filiform petioles; immersed leaves long, sessile, linear or lanceolate; stipules connate, 2-ribbed; peduncles thickened upward; spikes narrowly cylindrical; achenium smooth, slightly keeled on the back. — Shallow ponds, North Carolina, and northward. July. — Floating leaves 1′-2′ long. Immersed leaves 4′-6′ long.

9. **P. hybridus,** Michx. Small; stems very slender, branched; floating leaves lanceolate or elliptical, commonly acute at each end, shining and strongly impressed-nerved, longer than the filiform petioles; immersed leaves filiform, scattered; spikes oval or oblong, short-peduncled; achenium nearly circular, concave on the sides, rugose or tuberculate, and 1-3-ridged on the back; embryo coiled. — Shallow ponds. June-August. — Floating leaves 6″-8″ long, commonly 5-nerved.

ORDER 141. ALISMACEÆ. (WATER-PLANTAIN FAMILY.)

Marsh herbs, usually with creeping runners or rootstocks, nerved and reticulated sheathing leaves, and scape-like stems, bearing the perfect or monœcious flowers in spikes or whorled racemes. — Sepals and petals 3, or the latter sometimes wanting. Stamens few or numerous: anthers 2-celled. Ovaries 3 or many, with 1 – 2 anatropous or campylotropous erect ovules. Style short or none. Achenium coriaceous, 1 – 2-seeded. Embryo straight or curved, without albumen.

Synopsis.

SUBORDER I. JUNCAGINEÆ. Sepals and petals (when present) greenish. Ovule anatropous. Embryo straight.

1. **TRIGLOCHIN. Leaves rush-like. Flowers in spiked racemes.**

SUBORDER II. ALISMEÆ. Petals white, deciduous. Ovule campylotropous. Embryo curved or hooked.

2. **ALISMA. Flowers perfect. Achenia whorled. Racemes compound.**
3. **ECHINODORUS. Flowers perfect. Achenia clustered in a head.**
4. **SAGITTARIA. Flowers monœcious. Achenia clustered in a head.**

1. TRIGLOCHIN, L.

Flowers perfect, in a spiked raceme. Sepals 3. Petals 3, and greenish, like the sepals, or none. Anthers 3 – 6, nearly sessile, oval. Ovaries 3 – 6, united around a central axis, from which they separate at maturity, 1-ovuled. Stigmas plumose. Embryo straight. — Leaves rush-like, fleshy, 2-ranked. Flowers small, bractless.

1. **T. triandra,** Michx. Leaves erect, linear-subulate, semi-terete, dilated at the base and sheathing the base of the terete scape; flowers numerous, on short pedicels; sepals oval, deciduous; petals none; anthers and ovaries 3; fruit globose-triangular, pointless, when dry 3-winged by the compressed 3-ribbed achenia; embryo oblong. — Salt marshes along the coast. August – Sept. — Scape and leaves ½° – 1° high.

2. ALISMA, L. WATER-PLANTAIN.

Flowers perfect in a whorled panicle. Sepals 3. Petals 3, involute in the bud, deciduous. Stamens 6 – 12. Ovaries numerous in a simple whorl. Style short. Achenium 1-seeded, 2 – 3-keeled on the back. — Roots fibrous. Leaves mostly oval or cordate, nerved, shorter than the scape. Flowers white.

1. **A. Plantago,** L. Leaves long-petioled, ovate or oblong, acute, rounded or cordate at the base, 3 – 9-nerved; panicle large, lax, the whorled branches and elongated filiform pedicels bracted at the base; achenia obtuse, 15 – 20 in a whorl. — Ditches and margins of ponds in the upper districts. July – August. — Leaves 2′ – 4′ long. Panicle 1° – 2° long.

3. ECHINODORUS, Richard.

Flowers perfect. Sepals 3. Petals 3, imbricated in the bud, withering. Stamens few or numerous. Ovaries few or many, imbricated, forming ribbed achenia in fruit, usually beaked with the persistent style. — Herbs, with petioled nerved leaves. Heads mostly bur-like.

1. **E. parvulus,** Engelm. Small; leaves lanceolate or spatulate, commonly shorter than the 1 – 6-flowered scape; pedicels mostly clustered, recurved in fruit; stamens 9; achenia few, obovate, flattened at the sides, and surrounded with 5 prominent ribs, beakless. — Margins of shallow ponds, Florida, and westward. July – August. — Scapes 1′ – 4′ high. Achenia black and shining.

2. **E. rostratus,** Engelm. Leaves ovate, rounded or cordate at the base, 5-nerved, about as long as the petiole; scape rigid, longer than the leaves; whorls few; pedicels erect or spreading; sepals ovate, shorter than the oval bur-like head; stamens 12; achenia numerous, strongly 3-ribbed on the back, beaked. — South Florida, and westward. — Scape simple, 3′ – 8′ high, or occasionally 2° high and paniculately branched. Leaves 1′ – 2′ long. Flowers 5″ wide.

3. **E. radicans,** Engelm. Leaves large, long-petioled, ovate, cordate or truncate at the base, 7 – 9-ribbed; scape long, prostrate, rooting, and proliferous; whorls several, remote; pedicels spreading or recurved; stamens about 20; heads globose; achenia very numerous, short-beaked, ribbed and slightly denticulate on the back. — Swamps. July – Sept. — Scape 2° – 4° long. Leaves 3′ – 8′ long. Flowers 8″ – 12″ wide.

4. SAGITTARIA, L. Arrow-grass.

Flowers monœcious, racemose, the upper ones sterile. Sepals 3, persistent. Petals 3, imbricated in the bud, withering. Stamens few or many. Ovaries crowded in a globular head. Achenia flat, membranaceous, winged. — Marsh or aquatic herbs, with scape-like stems, and variously shaped nerved and reticulated sheathing leaves, which are often without a blade. Flowers white, commonly three in a whorl from the axils of persistent bracts.

* *Filaments long and slender.*

1. **S. lancifolia,** L. Tall; leaves erect, rigid, from broadly to linear lanceolate, acute at each end, pinnately nerved, on long and stout petioles; scape longer than the leaves, often branching above; pedicels of the sterile flowers slender, longer than those of the fertile ones; bracts and sepals ovate, obtuse, granular-roughened; stamens numerous, with hairy filaments; achenia obliquely obovate, wing-keeled, strongly beaked. — Lakes and rivers, Florida to South Carolina, and westward. June – Sept. — Scape 2° – 5° high. Leaves 1° – 2° long. Flowers 1′ – 1½′ wide.

2. **S. variabilis,** Engelm. Leaves mostly sagittate, acute or obtuse, varying from linear to broadly ovate, smooth, or rarely, like the scape, bracts, and sepals, pubescent; bracts acute; flowers mostly large; pedicels of the

sterile flowers twice as long as those of the fertile ones; achenia obovate beaked; filaments smooth. (S. sagittifolia, hastata, pubescens, etc. *of authors.*) — Marshes, ditches, etc. July – Sept. — Scape 1° – 3° high, angled. Leaves 2′ – 12′ long.

* * *Filaments short, thickened at the base.*

3. **S. heterophylla,** Pursh. Scape weak; leaves linear or lanceolate, and acute at each end, or elliptical, and obtuse or sagittate at the base; bracts obtuse; sterile flowers on long and slender pedicels; the fertile ones nearly sessile, achenia narrowly obovate, long-beaked. — Schurlock's Spring, West Florida, Tennessee, rare. — Leaves 2′ – 4′ long. Scape few-flowered, the lowest whorl only bearing fertile flowers.

4. **S. graminea,** Michx. Scape slender, commonly prostrate in fruit, simple or branched; leaves linear or lanceolate, acute at each end, 3-nerved, erect, the earliest mostly destitute of a blade; bracts membranaceous; flowers small, all on long filiform pedicels; stamens 10 – 12, hairy at the base; achenia obovate, wing-keeled, beakless. — Shallow ponds in the pine barrens. May – Oct. — Scape 10′ – 15′ high, usually longer than the leaves.

5. **S. filiformis,** J. G. Smith. Leaves filiform, bladeless; scape filiform, much branched, 2° – 3° long; whorls 6 – 10, remote; fertile flowers 1 – 2; stamens 7; mature achenia not seen. — Aquatic, floating in still water, Florida and Alabama (*J. G. Smith*).

6. **S. macrocarpa,** J. G. Smith. Leaves linear-lanceolate; scape simple, 10′ – 12′ high; whorls 3 – 5; bracts ovate, connate; fertile flowers 1 – 3; stamens about 12; achenia oblong-obovate, broadly winged, short-beaked, the sides even. — Margins of ponds, South Carolina (*Curtis*).

7. **S. teres,** Watson. Leaves terete, mostly bladeless; scape simple, 6′ – 15′ high, few-flowered; bracts ovate, obtuse; fertile flowers 1 – 2; stamens 12; achenia round-obovate, short-beaked, crenately crested on the back and sides, — Shallow water. South Carolina (*Smith*), and northward.

8. **S. natans,** Michx. Small; leaves floating, ovate-oblong or elliptical, obtuse at each end or the lowest slightly cordate, 5 – 7-nerved, about as long as the few-flowered scape; bracts membranaceous, acute; pedicels of the fertile flowers stouter than those of the sterile ones, recurved in fruit; stamens 7 or 8; achenia obovate, 3-ribbed on the back, short-beaked. — Shallow ponds and streams, Florida to South Carolina. June – Sept. — Scapes 3′ - 6′ long. Leaves 1′ – 2′ long.

Var. **lorata,** Chapm. Leaves strap-shaped, obtuse, without a blade, nerveless; scapes floating or erect; flowers sometimes diœcious; achenia conspicuously beaked, pimpled. — Brackish water, along the coast. May – Sept. — When growing in deep water the floating scapes are 2° – 3° long; when on muddy banks, only 3′ – 5′ high.

Var. **pusilla.** Still smaller (1′ – 3′ high); leaves linear or subulate, mostly with a short blade, longer than the 2 – 9-flowered scape. — With the preceding.

ORDER 142. HYDROCHARIDACEÆ. (FROG'S-BIT FAMILY.)

Aquatic herbs, with monœcious or diœcious flowers, from a membranaceous spathe. Sepals and petals 3, or the latter wanting, distinct in the sterile flower, united into a tube in the fertile, and coherent with the 1–9-celled ovary. Stamens 3–12. Ovules numerous, ascending, orthotropous. Stigmas 3–9. Fruit indehiscent, many-seeded. Embryo straight, without albumen.

Synopsis.

* Ovary 1-celled. Stigmas 3–5.

1. **ELODEA.** Flowers polygamo-diœcious. Spathe sessile. Stamens 9. Leaves short, opposite or whorled.
2. **VALLISNERIA.** Flowers diœcious. Spathe peduncled. Stamens 3. Leaves long, linear.
3. **HALOPHILA.** Flowers diœcious, axillary. Leaves opposite. Marine herbs.

* * Cells of the ovary and stigmas 6–9.

4. **LIMNOBIUM.** Flowers monœcious. Stamens 6–9, monadelphous. Leaves cordate petioled.

1. ELODEA, Michx.

Flowers diœciously polygamous, enclosed in the bud in a 2-cleft axillary sessile spathe. Sterile flowers minute. Sepals and petals 3. Anthers 9. Fertile flowers pistillate or perfect. Sepals and petals united into a very long and slender 6-parted tube. Stamens 3–6, perfect or sterile. Ovary 1-celled, with three parietal placentæ, few-ovuled. Style capillary, adnate to the tube. Stigmas 3, each 2-lobed, exserted. Fruit oblong, coriaceous. — Perennial herbs, with elongated filiform branching immersed stems, and small and very numerous opposite or whorled leaves. Fertilization effected by the sterile flowers breaking away from the stem, and expanding at the surface among the floating stigmas.

1. **E. Canadensis,** Michx. Stem much branched; leaves 3–4 in a whorl, sessile, varying from linear to elliptical, 1-nerved, pellucid and minutely serrulate. — In slow-flowing streams and ponds. Cherokee, North Carolina (*Curtis*), and northward. July–August. — Leaves 3″–6″ long.

2. VALLISNERIA, Micheli. TAPE-GRASS.

Flowers diœcious. Sterile flowers numerous, minute, crowded on a spadix, which is enclosed in an ovate 3-leaved short-stalked spathe. Calyx 3-parted. Corolla none. Stamens 3. Fertile flowers solitary, enclosed in a tubular spathe, and borne on a very long and mostly spiral scape. Sepals and small petals 3, united and coherent with the cylindrical 1-celled many-ovuled ovary. Stigmas 3, each 2-lobed. Seeds numerous, fixed to three parietal placentæ. — Aquatic herbs, with creeping stems, and elongated strap-shaped leaves. Fertilization effected mostly as in Elodea.

1. **V. spiralis,** L. — Slow-flowing streams and ponds. July – Sept. ♃ — Plant creeping, proliferous. Leaves obtuse, 5 – 9-nerved, sharply serrulate, 1° – 3° long, 6″ – 12″ wide. Scape of the sterile flowers 1′ – 4′ long; of the fertile, spiral, 2° – 5° long. Fruit 1′ – 3′ long, often curved.

3. HALOPHILA, Thouars.

Flowers diœcious, axillary, solitary. Perianth 2-leaved. Stamens 3, monadelphous; anthers 1-celled. Ovary 1-celled, with numerous parietal ovules. Style long, filiform; stigmas 3 – 5, penicillate. Capsule indehiscent. Seeds globular. Embryo in copious albumen. — Marine herbs, with creeping stems, and opposite pellucid stipulate leaves.

1. **H.** (?) **Engelmannii,** Ascherson. Stem filiform, much branched; leaves, seemingly whorled at the end of the branches, linear-oblong, 3-nerved, sharply serrulate (1′ or less long); flowers and fruit unknown. — Muddy coves along the west coast of Florida.

4. LIMNOBIUM, Richard.

Flowers monœcious, from a membranaceous mostly sessile spathe, peduncled. Sterile spathe entire, 2 – 3-flowered; the fertile 3-leaved, 1-flowered. Sepals and petals 3, united in the fertile flower, and coherent with the ovary. Stamens 6 – 12, monadelphous: anthers linear. Ovary 6 – 9-celled, with as many central placentæ, forming a many-seeded berry in fruit. Stigmas 6 – 9. each 2-parted. — A floating aquatic herb, with copious pendent roots, long-petioled round-cordate and many-nerved leaves, and small white flowers.

1. **L. Spongia,** Richard. Stems extensively proliferous; leaves purplish beneath, and with air-cells near the base; sterile peduncles tender, soon vanishing; the fertile commonly short and thick, recurved in fruit; petals oblong, alternating in the fertile flower with a pair of minute sterile filaments. — Still water, Florida, and northward. July – August. ♃ — Leaves 2′ – 4′ wide.

ORDER 143. BURMANNIACEÆ. (BURMANNIA FAMILY.)

Small herbs, with filiform stems, scale-like leaves, and regular perfect flowers. — Sepals and petals united to form a tubular unequally 6-cleft corolla-like perianth, with the tube coherent with the 1- or 3-celled many-ovuled ovary. Stamens 3 or 6, inserted on the tube of the perianth: anther cells separate, 2-lobed, opening crosswise. Style slender: stigmas 3, dilated. Placentæ 3, central or parietal. Capsule many-seeded. Seeds minute, with a loose or reticulated testa.

1. BURMANNIA, L.

Tube of the perianth mostly 3-angled or 3-winged, withering-persistent; the three interior lobes smaller. Stamens 3, very short. Ovary 3-celled, with three thick 2-lobed central placentæ. Stigmas globose, dilated or 2-

lobed. Capsule splitting at the apex into three valves. — Radical leaves crowded and grass-like, or none; those of the stem minute, scale-like. Flowers racemose or clustered.

1. **B. biflora,** L. Stem simple, or forked above, 1–several-flowered; leaves subulate, scattered; perianth blue, broadly 3-winged; seeds oblong, striate. — Grassy or mossy margins of swamps and ponds, Florida to North Carolina. Sept.–Nov. — Stem 1′–5′ high. In this and the following species the seeds escape through irregular lateral fissures.

2. **B. capitata,** Chapm. Stems setaceous, simple; leaves subulate, scattered; flowers several in a terminal cluster, white, tinged with blue; perianth wingless; seeds linear-oblong, spirally striate. — Low pine barrens, Florida to North Carolina. Sept.–Nov. — Stems 2′–6′ high.

2. APTERIA, Nutt.

Perianth terete, tubular-bell-shaped, with the 3 interior lobes smaller. Stamens 3, very short; the filaments flat and orbicular at the apex: anthers closely adhering to the globose stigmas. Ovary 1-celled, with three 2-winged parietal placentæ. Capsule obovate, splitting from the base into three valves, which remain attached to the apex of the persistent placentæ. Seeds ovoid. — A small perennial herb, with subulate bract-like leaves, and scattered nodding flowers.

1. **A. setacea,** Nutt. — Deep shady woods, along the margins of swamps, Florida, Georgia, and westward. Sept.–Oct. — Stem purple, simple or branched, 2′–8′ high. Leaves scattered. Flowers few, distant, on nodding pedicels. Perianth white, 5″ long.

ORDER 144. ORCHIDACEÆ. (ORCHIS FAMILY.)

Perennial herbs, with simple stems, from thick fibrous or tuberous roots, nerved leaves, and irregular often showy flowers. — Perianth 6-parted, united below with the 1-celled ovary; the three outer divisions (calyx) and commonly two of the inner ones (petals) similar in form; but the third, posterior, or, by the twisting of the ovary, anterior one (*labellum* or *lip*) differs from the others in form, and often bears a spur or prominence at the base beneath. Stamens 3, united with the style into a column, one or (in Cypripedium) two only bearing a 2-celled anther. Pollen grains cohering in 2, 4, or 8 waxy or powdery masses (*pollinia*). Capsule with three parietal placentæ, splitting at the sides into three valves. Seeds very numerous, minute, covered with a loose membranaceous testa. Albumen none. — Plants mostly smooth and more or less succulent. Leaves almost always alternate, sheathing and entire. Stems leafy or scape-like. Flowers bracted, solitary, spiked, or racemed, and remarkable for their various and singular forms.

Synopsis.

I. **Anthers solitary, fixed to the apex of the column like a lid, deciduous.**

TRIBE I. **MALAXIDEÆ.** Pollen in smooth waxy masses, without stalks or connecting tissue. — Roots tuberous.

* Stems leafy.

1. MICROSTYLIS. Lip cordate or sagittate. Column minute, 2-toothed at the apex.
2. LIPARIS. Lip entire. Column elongated, incurved, margined at the apex.

* * Stems sheathed.

3. CORALLORHIZA. Spur of the lip short and adnate to the ovary. Root branching, toothed.
4. APLECTRUM. Lip spurless. Root of two solid connected tubers, bearing a single leaf.

TRIBE II. **EPIDENDREÆ.** Pollen in smooth waxy masses connected by elastic tissue.

5. EPIDENDRUM. Pollen masses 4. Claw of the spurless lip adnate to the column.
6. TIPULARIA. Pollen masses 4. Lip free, spurred. Stem sheathed.
7. BLETIA. Pollen masses 8. Lip free, hooded, spurless.
8. HEXALECTRIS. Pollen masses 8. Lip free, obovate, 5-6-crested, 3-lobed. Stem leafless.

TRIBE III. **VANDEÆ.** Pollen in smooth waxy masses, fixed by an elastic stalk to the gland of the stigma.

9. DENDROPHYLAX. Pollen masses 2. Lip with two long spreading lobes. Epiphytes.
10. POLYSTACHYA. Pollen masses 4. Petals smaller than the sepals. Epiphytes.
11. CYRTOPODIUM. Pollen masses 2. Petals and sepals equal. Terrestrial.

TRIBE IV. **ARETHUSEÆ.** Pollen in loose powdery masses. Lip crested.

12. CALOPOGON. Pollen masses 2, bipartible. Column incurved, winged at the apex.
13. POGONIA. Pollen masses 2. Column wingless, club-shaped.
14. ARETHUSA. Pollen masses 4. Column petal-like. Root a solid tuber.
15. VANILLA. Pollen masses 2. Stem climbing. Flowers in axillary racemes.

II. **Anther solitary, adnate to the column, erect, persistent.**

TRIBE V. **OPHRYDEÆ.** Anther adnate to the apex of the column, the cells separate. Pollen cohering in numberless waxy grains, which are collected by elastic tissue into a large mass, and attached to a gland of the stigma by an elastic stalk. Lip spurred.

16. ORCHIS. Anther cells contiguous, parallel. Glands of the stigma covered with a common hood-like fold of the stigma.
17. GYMNADENIA. Anther cells contiguous, parallel. Glands of the stigma naked.
18. PLATANTHERA. Anther cells diverging from the base. Glands of the stigma naked.
19. HABENARIA. Anther cells diverging. Glands naked. Throat of the stigma furnished with variously shaped appendages.

TRIBE VI. **NEOTTIEÆ.** Anther attached to the back of the column, parallel with the stigma; the cells approximate. Pollen powdery.

* Pollen masses 2.

20. SPIRANTHES. Lip nearly entire, clasping the column, obtuse.
21. GOODYERA. Lip sessile, entire, contracted above the middle, slender-pointed.
22. PHYSURUS. Lip sessile, dilated above. Column very short. Stem leafy.
23. LISTERA. Lip 2-cleft. Stem with a pair of ovate opposite leaves.

* * Pollen masses 4.

24. PONTHIEVA. Claws of the petals and lip adnate to the column.

III. **Anthers two, fixed beneath the lateral lobes of the column.**

TRIBE VII. **CYPRIPEDIEÆ.** Column appendaged by the petal-like sterile stamen.

25. CYPRIPEDIUM. Lip large, inflated. Leaves large, plaited.

1. MICROSTYLIS, Nutt. ADDER'S MOUTH.

Sepals oblong, spreading. Petals filiform. Lip cordate or sagittate, entire or nearly so, sessile. Column minute, 2-toothed at the apex. Anther lid-like. Pollen masses 4, collateral, united by pairs at the apex. — Low herbs, from bulbous roots. Stem 1 - 2-leaved, sheathed below. Flowers racemed or spiked, minute, greenish.

1. **M. ophioglossoides,** Nutt. Leaf solitary near the middle of the 5-angled stem, ovate, clasping; raceme short, with the unexpanded flowers crowded in a globular head, elongated in fruit; pedicels slender, much longer than the flowers; lip auricled at the base, 3-toothed at the apex. — Low shady woods, Florida, and northward. July - August. — Stem 4′ - 8′ high. Leaf 1′ - 2′ long. Flowers ½″ wide.

2. **M. Floridana,** Chapm. Leaves 2, near the base of the 3-angled stem, unequal, ovate, or elliptical, sheathing; raceme slender, acute, elongated in fruit, many-flowered; pedicels longer than the flowers; sepals oblong, spreading, with the margins revolute; petals reflexed, twisted; lip round-auriculate-cordate, abruptly narrowed and entire at the apex, depressed at the sinus; capsule oblong or obovate. — Wet shady woods, Florida. July - August. — Stem 6′ - 12′ high. Leaves 1′ - 4′ long. Flowers 1″ wide.

2. LIPARIS, Richard. TWAYBLADE.

Sepals spreading. Petals linear or filiform, spreading or reflexed. Lip entire, flat, often with two tubercles above the base. Column long, semi-terete, incurved, margined at the apex. Pollen masses 4, collateral, united by pairs at the apex. — Low herbs, from bulbous roots. Leaves 2, sheathing the base of the scape-like stem. Flowers racemed, greenish or purplish.

1. **L. liliifolia,** Richard. Leaves elliptical, obtuse, sheathed at the base; scape 3-angled, 10 - 20-flowered, longer than the leaves; sepals linear, whitish; petals filiform, reflexed, yellowish; lip large, wedge-obovate, concave, abruptly pointed, brownish purple. — Low shady woods and banks in the upper districts. June - July. — Scape 5′ - 10′ high. Leaves 2′ - 4′ long. Lip ½′ long.

3. CORALLORHIZA, Haller. CORAL-ROOT.

Sepals and petals alike, oblong or lanceolate, connivent. Lip clasping the base of the straight 2-edged column, spreading and concave above, 2-ridged near the base, spurless, or with the spur adnate to the ovary. Anther lid-like. Pollen masses 4, incumbent. — Low dull-colored leafless herbs, with coral-like roots, sheathed stems, and racemose flowers.

1. **C. multiflora,** Nutt. Root branching, toothed; stem stout, 9′ - 15′ high; racemes many-flowered, the bracts small, rounded; sepals and petals purplish brown, 3″ long, the whitish lip 3-lobed, spotted; spur prominent, adnate. — Shady woods, Tennessee, and northward. July. — Raceme 10 - 30-flowered.

2. **C. odontorhiza,** Nutt. Root pinnately branched and toothed; stem slender above; sheaths 3, elongated; racemes 10 - 15-flowered: sepals and petals erect, lanceolate; lip entire, distinctly clawed, oval, with two ridges in

the throat, white spotted with purple; the margins crenulate below the middle and involute above; capsule oval, nodding. — Shady woods. Feb.–March. — Stem 8′–16′ high. Lip 4″ long.

3. **C. micrantha,** Chapm. Root toothed; stem low, rigid; sheaths 2, abruptly pointed; raceme 6–12-flowered; flowers very small (1″–1½″ long), erect; sepals and petals nearly equal, lanceolate, erect; lip short-clawed, entire, denticulate on the margins, without teeth or ridges, shorter than the sepals, white spotted with purple; capsule obovate, nodding. — Shady woods, Florida and Georgia. August–Sept. — Stem 3′–6′ high.

4. APLECTRUM, Nutt. PUTTY-ROOT.

Sepals and petals alike, linear-oblong, erect. Lip spurless, short-clawed, 3-lobed and 3-ridged at the throat. Column straightish, cylindrical. Anther lid-like, slightly lateral. Pollen masses 4. — Root tuberous, proliferous, very glutinous within, first bearing a single large plaited petioled leaf, which is persistent through the winter, and afterward a 3-sheathed scape, with a raceme of yellowish flowers at the summit.

1. **A. hiemale,** Nutt. — Rich woods, chiefly in the upper districts. April–May. — Leaf oval, many-nerved, 4′–6′ long. Scape 12′–15′ high, 10–15-flowered. Sepals and petals tipped with brownish purple. Lip whitish, spotted, the middle lobe rounded and crenulate on the margins. Capsule reflexed.

5. EPIDENDRUM, L. TREE ORCHIS.

Sepals and petals nearly equal and alike, widely spreading. Lip with the claw wholly or partly adnate to the elongated margined or winged column, entire or parted, mostly rigid or tubercled on the face. Spur none, or adnate to the ovary. Column prolonged at the apex into a toothed or fimbriate cup. Anther lid-like, somewhat 4-celled. Pollen masses 4, lenticular, stalked. — Stemless herbs, from a tuberous or creeping rhizoma, clinging to the bark of trees by thick matted roots. Leaves sheathing, rigid, perennial. Scape sheathed or bracted, bearing a raceme of greenish and purplish flowers.

1. **E. conopseum,** Ait. Scape few-many-flowered; leaves 1–3, coriaceous, lanceolate, acute, spreading; bracts subulate, the lowest somewhat leafy; sepals spatulate, obtuse, with revolute margins; petals linear-spatulate, obtuse; lip 2-tubercled at the base, 3-lobed, the lateral lobes rounded and crenulate, the middle one notched at the apex, the claw wholly adnate to the slightly margined column. — On various trees, but chiefly on Magnolias, Florida to South Carolina. August. — Scape 2′–8′ high. Leaves 1′–3′ long. Flowers 4″–5″ long, green tinged with purple.

2. **E. Tampense,** Lindl. Scape tumid at the base, 5–7-flowered; leaves 2, linear-lanceolate, abruptly pointed; bracts short, ovate; sepals and petals spatulate-lanceolate, acute; lip 3-parted, 2-crested in the middle; the lateral lobes oblong, acute; the middle one wedge-shaped, notched at the apex, the claw partly adnate to the 2-winged column. — South Florida — Scape 1° high, invested with numerous short whitish sheaths. Leaves 4′–5′ long. Flowers 8″ long.

3. **E. cochleatum,** L. Stem tuber-like, ovate-lanceolate, 2-edged, scaly, 2 leaved; leaves oblong-lanceolate, acute, as long as the few-flowered scape; flowers racemose, short-bracted; sepals and petals greenish, broadly linear, recurved; lip much shorter, purple, entire, cordate-roundish, cochleate, acute, 2-callous at the base. — South Florida (*Garber*). — Stem 1° high. Leaves 1′ wide. Flowers 1′ – 1½′ long.

4. **E. umbellatum,** Swartz. Stem leafy; leaves oblong, obtuse (2′ – 3′ long); flowers umbellate, greenish; bracts ovate; sepals oblong; petals linear; lip reniform-roundish, obscurely 3-lobed, veiny, 2-callous at the base. column denticulate. — Miami, South Florida (*Garber*). — Stem 6′ – 12′ high. Flowers 6″ – 8″ long.

5. **E. nocturnum,** L. Stems leafy; leaves oblong or oval, obtuse; flowers 1 – 2, terminal, white or yellowish, long-peduncled; petals large, linear, acuminate, lip 3-cleft, the lateral lobes ovate-oblong, the middle lobe longer, linear-setaceous. — With the preceding. — Stem 1° – 2° high. Leaves 2′ – 5′ long. Flowers 1½′ – 2½′ long.

6. TIPULARIA, Nutt.

Sepals and petals oblong, spreading. Lip long-spurred, 3-lobed the lateral lobes short and triangular, the middle lobe linear. Spur filiform, ascending. Column slender, wingless. Anther lid-like. Pollen masses 4, stalked, waxy. – Root tuberous, proliferous, first producing a single ovate leaf, on a sheathed petiole, afterward a slender sheathed scape, ending in a long raceme of numerous greenish flowers.

1. **T. discolor,** Nutt. — Shady banks, chiefly in the upper districts. August. — Scape about 1° high. Leaf 1′ – 2′ long, acute, somewhat plaited and many-nerved, purple beneath. Flowers small, nodding, bractless. Spur about 1′ long.

7. BLETIA, Ruiz & Pavon.

Sepals and petals alike and nearly equal, spreading. Lip spurless, jointed, 3-lobed, crested on the face. Column free, elongated, semi-terete. Anther lid-like, fleshy. Pollen masses 8, by pairs, with a stalk to each pair, waxy, becoming powdery. — Scape from tuberous rootstocks, sheathed or scaly, many-flowered. Leaves narrow, plaited. Flowers spicate or racemose, mostly showy.

1. **B. verecunda,** Swartz. Scape lateral, sheathed, many-flowered; leaves mostly 3, lanceolate; flowers dark green, 1′ wide; sepals lanceolate, acute, longer than the obtuse petals; lip saccate at the base, dark brown within, the lateral lobes short and rounded, the middle one wavy-crenulate, purplish, crested; column stout, half as long as the sepals; anther appendaged on the back; capsules pendulous. — Low pine barrens, South Florida. Oct. — Scape 2° high. Leaves 12′ – 18′ long.

8. HEXALECTRIS, Raf.

Sepals and petals nearly equal. Lip not saccate, 3-lobed, 5 – 6-crested. Pollen masses 8. — Scape leafless, sheathed Flowers large, in a terminal spike, purplish.

1. **H. aphyllus,** Raf. Scape stout, terete, tapering into the many-flowered spike; sheaths several, short, the upper ones passing into the ovate acuminate bracts; flowers spreading, brownish, striped with purple; sepals and petals oblong-lanceolate, oblique, lip concave, emarginate, with a 6-ridged crest along the middle, the lateral lobes erect. — Rich shaded soil. July–August. — Root consisting of horizontal, jointed tubers. Scape 1°–1½° high. Perianth ¾′ long.

9. DENDROPHYLAX, Reichenbach, f.

Sepals and petals spreading. Lip erect, 3-lobed, the lateral lobes small angular, the middle one with 2 widely spreading lobes. Spur very long, filiform. Column short. Pollen masses 2. — Epiphytes. Scape leafless, in ours bearing a single large white flower.

1. **D. Lindenii,** Reichenbach, f. Scape filiform (3′–4′ long); sepals and petals lanceolate; segments of the middle lobe of the lip lanceolate curved, attenuate; capsule stipitate, oval smooth. — On Oreodoxa regia, South Florida (*Curtiss*).

10. POLYSTACHYA, Hook.

Two upper sepals broad, gibbous, connivent. Petals small. Lip jointed, sessile, 3-lobed. Anthers lid-like, free. Pollen masses 4, hemispherical, waxy. — Epiphytes. Stem leafy near the base. Flowers small, in simple or compound racemes.

1. **P. luteola,** Hook. Stem (1°–2° high) tuberous at base, longer than the few lance-oblong rigid leaves; raceme compound; flowers greenish yellow; the lip obovate, oblong, downy within, the lateral lobes small, the middle one broad and recurved. — On various trees, South Florida.

11. CYRTOPODIUM, R. Br.

Sepals and petals alike, spreading. Lip clawed, continuous with the base of the column, incurved, 3-lobed. Pollen masses 2 the short stalk linear. Gland ovate. — Terrestrial. Scape sheathed, separate from the leaves. Flowers racemose or panicled.

1. **C. punctatum,** Lindl. Scape tall; leaves broadly lanceolate, strongly 3-ribbed (1½′ wide); flowers in a simple panicle (6″–8″ long); bracts leafy, lanceolate, undulate, spreading; sepals and petals greenish white, spotted; middle lobe of the lip emarginate. — Miami, South Florida (*Garber*).

2. **C. Woodfordii,** Lindl.? Scape more slender (2°–3° high); leaves rigid, linear-lanceolate (1° long); racemes rather closely flowered (2′–4′ long); flowers small, shorter than the linear bracts; sepals and petals green; lip crestless, the middle lobe cuneate-oblong; capsule erect. (Bletia verecunda, 1st edit. in part.) — Low sandy pine barrens, Florida.

12. CALOPOGON, R. Br.

Sepals unequal, the two lateral ones broader and oblique. Lip (by the untwisted ovary) brought to the upper or inner side of the flower, dilated at the apex, bearded on the face, and narrowed into a hinge-like claw. Column long, incurved, winged at the apex. Anther terminal, lid-like, sessile. Pollen masses 2, powdery. — Scape erect from a solid tuber, sheathed at the base, bearing below the middle a single narrow sheathing leaf, and terminated with a loose spike of showy flowers.

1. **C. pulchellus,** R. Br. Scape 2 - 8-flowered; leaf linear-lanceolate; flowers large, mostly approximate, bright purple; lateral sepals ovate, shorter than the lanceolate obtuse petals; lip broadly obcordate; filaments of the crest decurrent on the claw, the lower ones purple and united; ovary straight, 2 - 3 times as long as the lanceolate-subulate bracts. — Swamps. June. — Scape 1½° - 2° high. Leaves 6′ - 12′ long. Flowers 1′ - 1½′ wide.

2. **C. pallidus,** Chapm. Scape 10 - 20-flowered; leaf linear; flowers scattered, white tinged with purple; lateral sepals oblong, shorter than the linear-lanceolate acute petals; lip wedge-obovate; filaments of the crest mostly united and purple at the base; ovary straight, scarcely longer than the subulate bract. — Wet pine barrens, West Florida, near the coast, to North Carolina. May. — Scape 1° - 1½° high. Leaves 6′ - 9′ long. Flowers 9″ - 12′ wide.

3. **C. parviflorus,** Lindl. Scape 3 - 6-flowered; leaf linear; flowers approximate, bright purple; lateral sepals oblong, longer than the oblong-lanceolate obtuse petals; lip wedge-obovate, emarginate, winged at the base; filaments of the crest all yellow and distinct; ovary curved, four times as long as the ovate-acuminate bract. — Wet pine barrens, Florida to North Carolina. March - April. — Scape 6′ - 12′ high. Leaves 3′ - 5′ long. Flowers 8″ - 10″ wide.

4. **C. multiflorus,** Lindl. Scape 7 - 14-flowered; leaves mostly two, linear, rigid; flowers approximate, deep purple; lip wedge-shaped, pointed, winged at the base, bearded in the middle with uniform filiform hairs; sepals and petals ovate, acute. — South Florida. — Plant 1° high. Leaves 3′ - 5′ long. Flowers of the size of the preceding.

13. POGONIA, Juss.

Sepals and petals alike, or the former narrower and elongated. Lip mostly crested and 3-lobed. Column club-shaped, wingless. Anther lid-like, stalked. Pollen-masses 2, powdery. — Stems erect from thick fibrous or tuberous roots, sheathed at the base, few-leaved, 1- or few-flowered. Leaves alternate or whorled. Flowers nodding, showy.

* *Sepals and petals nearly alike, erect.*

1. **P. ophioglossoides,** Nutt. Root fibrous; leaves 2, sessile, lanceolate, the upper one terminal and smaller; flower mostly solitary, terminal, sessile, pale rose-color; sepals lanceolate, as long as the oval or oblong petals; lip spatulate, flat, yellow-crested, fimbriate on the margins, longer than the petals, and twice as long as the thick column. — Swamps. April - May. — Stem 6′ - 12′ high. Flowers ½′ long.

2. **P. pendula,** Lindl. Root tuberous; leaves several, short, alternate, ovate, clasping; flowers 3 - 7, axillary, long-peduncled, drooping, whitish; sepals and petals lanceolate, acute; lip spatulate, somewhat 3-lobed, rough-

ened but not crested, rather shorter than the petals, longer than the column. — Rich shady woods, Middle Florida, and northward. July – August. — Stem 4′ – 8′ high. Leaves 6″ – 9″ long.

* * *Sepals (brown) linear, spreading, much longer than the erect petals: lip crested, 3-lobed.*

3. **P. divaricata,** R. Br. Leaves 2, sessile, lanceolate, one near the middle of the stem, the other smaller and bract-like at the base of the solitary terminal flower; sepals purplish brown, broadly linear, and, like the flesh-colored lanceolate petals, recurved at the apex; lip half-cylindrical, wavy and crenulate on the margins, 3-lobed at the apex, greenish veined with purple; crest beardless. — Swamps, Florida to North Carolina. May. — Stem 1° – 2° high. Leaves 2′ – 5′ long. Sepals 1′ – 1½′ long.

4. **P. verticillata,** Nutt. Leaves 5, obovate-oblong, abruptly pointed, whorled at the base of the solitary reddish brown flower; sepals linear, spreading, three times as long as the erect oblong yellowish petals, and yellowish 3-lobed wavy lip. — Low shady woods, rare. May. — Stem 1° high. Leaves enlarged in fruit. Flower peduncled. Sepals 2′ long.

14. ARETHUSA, Gronov.

Sepals and petals alike and nearly equal, cohering at the base, arching and connivent over the column. Lip adnate to the base of the column, dilated and bent downward above the middle, crested within. Column incurved, expanded and petal-like at the apex. Anther terminal, lid-like, with the cells approximate. Pollen masses 4, powdery. — Scape erect from a solid globular tuber, sheathed, bearing a single large terminal flower.

1. **A. bulbosa,** L. — Bogs on the mountains of Carolina (*Michaux*), and northward. May. — Scape 6′ – 9′ high. Sheaths 3 – 4, the uppermost enclosing a linear late-developed leaf. Flower 1′ – 2′ long, 2-bracted, bright purple and fragrant.

15. VANILLA, Swartz.

Lip adnate to the column, convolute; perianth jointed at the base, spreading. Column naked. Pollen masses 2. — Stem climbing by rootlets. Leaves jointed at the base. Flowers large, in axillary racemes. Capsule pulpy within.

1. **V. planifolia,** Andr. Stem cylindrical; leaves fleshy, oblong, acute, contracted at the base (5′ – 7′ long); bracts leafy; flowers (2′ long) green, the sepals and petals lance-oblong; lip serrate at the apex, thickened below, slightly crested in the middle; capsule cylindrical (6′ long). — Borders of the Everglades (*Curtiss*).

16. ORCHIS, L. Orchis.

Sepals and petals nearly equal, arching and connivent over the column, or the lateral sepals spreading. Lip adnate to the base of the column, depending, spurred at the base. Anther terminal, erect, the cells contiguous and parallel. Pollen-masses 2, waxy, stalked, and, with the two distinct glands, enclosed in a common sac or fold of the stigma. — Stem mostly scape-like, leafy at the base. Flowers showy, spiked.

1. **O. spectabilis,** L. Leaves 2, obovate-oblong, about as long as the 3–5-flowered 5-angled scape; bracts lanceolate, leafy, mostly longer than the flowers; sepals and petals connivent, oblong, purple; lip white, obovate, entire, crenulate, as long as the club-shaped spur. — Rich shady woods in the upper districts. May. — Root of thick clustered fibres. Scape 4′–6′ high. Flowers 6″–8″ long.

17. GYMNADENIA, R. Br.

Sepals and petals nearly equal, the lateral sepals spreading, the upper, with the rather shorter petals, arching and connivent over the short column. Lip adnate to the base of the column, spurred at the base. Anther erect, the cells contiguous and parallel. Pollen masses waxy, fixed by a stalk to the naked glands of the stigma. — Stems leafy. Flowers small, spiked.

* *Ovary twisted; the lip anterior.*

1. **G. flava,** Lindl. Stem slender (1° high); lowest leaf (4′–6′ long) lanceolate, sheathing, the others (6–8) small, the uppermost passing into the subulate bracts of the short (1′–2′ long) oblong densely many-flowered spike; flowers orange-yellow; lip ovate, slightly crenate; spur filiform, depending, shorter than the ovary. — Open grassy swamps, Florida, and northward. July – August.

2. **G. tridentata,** Lindl. Stem (9′–12′ high) scape-like above; lowest leaf (4′–6′ long) lanceolate-oblong, tapering into a sheathing base, obtuse, the others small, scattered, passing into the bracts; spike (1′–2′ long) loosely 4–12-flowered; flowers yellowish green; lip truncate, 3-toothed at the apex, longer than the petals; spur slender, club-shaped at the apex, curving upward, longer than the ovary. — Low shady woods in the upper districts. July.

* * *Ovary straight: lip posterior.*

3. **G. nivea,** Gray & Engelm. Stem slender (1°–1½° high); leaves numerous, one or two of the lower ones linear (4′–8′ long), the others small and bract-like; spike (2′–4′ long) cylindrical, loosely many-flowered; flowers white; lateral sepals ovate, slightly eared at the base; petals and entire lip linear-oblong; spur filiform, ascending, as long as the white roughish ovary. — Pine barren swamps, Florida, Georgia, and westward. July.

18. PLATANTHERA, Richard.

Sepals and petals nearly equal, the lateral sepals mostly spreading or reflexed. Lip entire or variously lobed or divided, spurred at the base. Column short. Anther cells diverging. Stigma without appendages, with the glands naked. — Root composed of thick fleshy fibres. Stems mostly leafy. Flowers spiked or racemed, commonly showy.

* *Lip entire, neither toothed nor fringed.*

1. **P. orbiculata,** Lindl. Leaves two, at the base of the scape-like bracted stem, large, orbicular, fleshy, spreading on the ground, silvery beneath; flowers greenish white, in a narrow and loose raceme, longer than the bracts; lateral sepals obliquely ovate, spreading, the upper orbicular; petals

narrower; lip linear-spatulate, entire, recurved; spur very long, club-shaped. curved. — Shady woods on the mountains of North Carolina. July – August. — Scape 1° – 1½° high. Leaves 5′ – 8′ in diameter.

2. **P. Garberi.** Root a globular tuber; stem erect (1° or more high); leaves oblong-lanceolate, widely spreading; spike loosely many-flowered; perianth greenish yellow, lateral sepals broadly ovate; petals wedge-shaped, truncate; lip linear, obtuse, entire; spur as long as the ovary (Habenaria, *Porter*). — Damp shady woods, Manatee, South Florida (*Garber*).

* * *Lip 3-toothed or 3-lobed: flowers spiked: stem leafy.*

3. **P. flava,** Gray. Leaves 3 – 4; the two lower ones lanceolate or oblong-lanceolate (4′ – 8′ long), the others small and bract-like; flowers small, brownish green, in a loose and slender many-flowered spike; sepals and petals oval; lip oblong, hastate – 3-lobed, the lateral lobes short and rounded, the middle one crenulate at the apex and bearing a tooth-like appendage at the throat; spur club-shaped, mostly shorter than the short ovary. — Low shady banks, Florida, and northward. July – August. — Stem 1° high. Flowers 2″ in diameter.

4. **P. bracteata,** Torr. Lower leaves obovate, the others smaller, lanceolate; flowers small, greenish; sepals and narrow petals erect; lip oblong-linear, slightly 3-toothed at the tip, longer than the obtuse sac-like spur. (Orchis viridis, *Pursh.*) — High mountains of Carolina (*Pursh*). — Stem low. Bracts large, conspicuous.

* * * *Lip undivided, fringed: flowers spiked: stems leafy.*

5. **P. ciliaris,** Lindl. Leaves numerous, the lower ones (4′ – 12′ long) lanceolate or oblong, the upper small and bract-like; spikes oval or oblong, rather loosely flowered; flowers large, bright yellow; lateral sepals round-obovate, reflexed; petals lanceolate, incised or slightly fringed at the apex; lip clawed, roundish in outline, long-fringed; spur filiform, commonly longer than the long tapering ovary. — Swamps and bogs, chiefly in the pine barrens, Florida, and northward. August. — Stem 1½° – 2° high. Spike 1½′ – 2′ in diameter. Ovary 9″ – 15″ long. Flowers 6″ – 8″ wide.

6. **P. blephariglottis,** Hook. Flowers usually larger, white; fringe of the lip shorter and coarser; spur much longer than the ovary; otherwise like the preceding. — Swamps. July – August.

7. **P. cristata,** Lindl. Leaves numerous, the lower ones (4′ – 8′ long) lanceolate, the uppermost bract-like; spike oblong or cylindrical, densely flowered; flowers small, yellow; lateral sepals rounded, spreading, concave; petals oblong, incised at the apex; lip sessile, ovate in outline, pinnatifid-fringed; spur filiform, half as long as the tapering ovary. — Bogs and swamps in the lower districts. August. — Stem 1° – 2° high. Spike 1′ in diameter. Ovary 5″ – 6″ long. Flowers 2″ – 3″ wide.

* * * * *Lip 3-parted, fringed or denticulate: flowers in spiked racemes: stem leafy.*

+ *Flowers yellowish white.*

8. **P. lacera,** Gray. Stem slender; lower leaves oblong, the uppermost small, passing into the lanceolate bracts; raceme oblong, loosely flowered;

petals oblong-linear, entire; lip pendent, the wedge-shaped lobes deeply divided into few spreading capillary filaments; spur as long as the ovary. — Swamps and low ground in the upper districts. July. — Stem 1° - 2° high. Lower leaves 3′ - 6′ long. Raceme 3′ - 5′ long.

+ + *Flowers purple: lip clawed.*

9. **P. psycodes,** Gray. Stem stout; lower leaves lanceolate or oblong, the upper small, passing into the linear-subulate bracts; flowers pale purple, crowded in a dense oblong raceme; lateral sepals roundish, obtuse; petals obovate, minutely denticulate at the apex; lip nearly twice as long as the sepals, spreading, the wedge-shaped lobes bordered with a short fringe. — Swamps and shaded banks, North Carolina, and northward. July. — Stem 2° high. Lower leaves 3′ - 6′ long. Lip 2″ - 3″ long.

10. **P. fimbriata,** Lindl. Stem stout; leaves oval or oblong, obtuse, a few of the upper ones small and lanceolate like the bracts; raceme oblong, rather loosely flowered; flowers large, pale purple; lateral sepals ovate, acutish, petals oblong, denticulate on the margins; lip twice as long as the sepals, spreading, the broad wedge-shaped lobes long-fringed; spur longer than the ovary. — Wet meadows, North Carolina, and northward. June. — Stem 2° - 3° high. Leaves 4′ - 6′ long. Lip 6″ - 9″ long.

11. **P. peramœna,** Gray. Stem stout; lower leaves oblong, obtuse, the upper lanceolate like the bracts; raceme oblong, rather loosely flowered; flowers large, violet purple; lateral sepals broad-ovate; petals round-obovate, minutely denticulate; lip spreading, the wedge-shaped lobes finely toothed, entire, or the middle one 2-lobed; spur longer than the ovary. — Mountains of North Carolina, and northward. July. — Stem 2° - 4° high. Lip 9″ long.

19. HABENARIA, Willd.

Sepals nearly equal, the lateral ones reflexed. Petals unequally 2-parted. Lip pendent, entire, or 3-parted, spurred. Anther cells erect, separate, diverging. Stigma bearing two variously-shaped appendages. Glands naked. Pollen masses 2, waxy, stalked. — Herbs with tuberous roots, leafy stems, and spiked flowers.

1. **H. repens,** Nutt. Root a creeping tuber; stem very leafy; leaves lanceolate, 3-ribbed; spike many-flowered; bracts lanceolate, the lower longer than the flowers; lateral sepals oblong, acute, the upper one ovate, erect; lower lobe of the petals capillary, longer than the linear upper one; lip 3-parted, the lateral lobes capillary, the middle one filiform; spur as long as the ovary. — Swamps and ditches in the lower districts. August - Sept. — Stem 1° - 2° long. Leaves 6′ - 12′ long. Flowers small, greenish.

2. **H. Michauxii,** Nutt. Root a globular watery tuber; leaves oval or oblong, the upper smaller, passing into the ovate-lanceolate clasping bracts; spike loosely few-flowered; sepals ovate; lower lobe of the petals capillary and twice as long as the lanceolate upper one; lip 3-parted, the capillary lateral lobes longer than the linear middle one; spur twice as long as the ovary. — Dry sandy or gravelly soil, Florida to South Carolina. August. — Stem 6′ - 18′ high. Leaves 2′ - 3′ long. Spike 3′ - 5′ long. Flowers white.

3. **H. distans,** Griseb. Stem leafy at base (1° high); leaves elliptical-oblong, acute (4′-6′ long); racemes few-flowered; bracts oblong-lanceolate, shorter than the ovary; flowers distant (4″ long); petals 2-parted, the upper lobe oblong, the lower linear; lip 3-parted, the segments linear, spreading; spur as long as the ovary. — South Florida (*Curtiss*).

4. **H. macroceratitis,** Willd. Stem 1°-1½° high, from a single tuber; leaves oblong; spike loosely few-flowered; bracts oblong, as long as the ovary; lateral sepals ovate-lanceolate, the upper ovate; lower lobe of the petals filiform, twice the length of the upper; lateral lobes of the lip filiform, longer than the middle one; spur 4′-5′ long. — Sumter County, Florida (*F. L. Lewton*).

20. SPIRANTHES, Richard. TWISTED ORCHIS.

Sepals and petals nearly equal · the lateral sepals diverging, dilated at the base, the upper one connivent with the petals. Lip clawed, concave, furnished with two callosities near the base, clasping the short column below. Stigma ovate, beaked. Anther attached to the back of the column. Pollen masses 2, obovate, 2-cleft, fixed to a common gland of the stigma, powdery. — Root composed of few clustered tubers or fleshy fibres. Stem leafy at the base, sheathed above. Flowers small, white, in a regular 1-sided or spirally twisted spike.

* *Flowers on all sides of the untwisted spike.*

1. **S. cernua,** Richard. Stem smooth below, the upper portion and thick crowded spike pubescent; lowest leaves long, linear-lanceolate, the others bract-like and sheathing; bracts ovate-lanceolate, acuminate, longer than the capsule; flowers recurved; lip longer than the sepals, contracted above the middle, wavy at the recurved obtuse apex. — Grassy swamps and meadows. Oct. — Stem 6′-12′ high. Leaves 4′-8′ long. Flowers yellowish white, 3″-4″ long.

Var. **parviflora.** Stem more slender; leaves shorter and broader (2′-6′ long, 4″-6″ wide); spikes narrower; perianth 2″ long, white. — Low shady woods, near Rome, Georgia. Sept.

2. **S. Storeri,** Chapm. Root of four thick fibres; leaves 3-4, ovate, acute, short-petioled, 1′ long; scape 6′ high, pubescent above; sheaths 7, free and acuminate at the apex; spike 2′ long, loosely 12-flowered, glandular, not twisted; flowers ½′ long, longer than lanceolate bracts; perianth 1½″ long; lip oblong, not recurved nor crenulate; anther ovate. — On decaying leaves, in a dense hummock, Enterprise, Florida. March. (*F. A. Storer.*)

3. **S. simplex,** Gray. Root a single tuber; stem short (6′ high), with withered leaves at the base; spike not twisted; flowers very small, white, the lip obovate oblong, crenulate, with slender prominences at the base. — Nashville, Tennessee (*Gattinger*), and northward.

* * *Spikes twisted, bringing the flowers into a single straight or spiral row.*

4. **S. brevifolia,** Chapm. Stem pubescent above; leaves all bract-like and sheathing, or the lowest expanding into a short (1′-2′) lanceolate or linear early withering blade; flowers all on one side of the rachis or sparingly spiral, horizontal, pubescent; bracts ovate, acute, scarcely longer than the ovary;

sepals and petals equal; lip oblong or elliptical, entire, wavy on the margins, recurved at the apex. — Open grassy swamps in the pine barrens, West Florida. Oct. – Nov. — Root of 3 fleshy fibres. Stem 1° high. Flowers 10 – 20, 3″ – 4″ long, white.

5. **S. odorata,** Nutt. Stem stout, leafy; lower leaves from linear to oblong-lanceolate, acute, the others diminishing upward and passing into the large lanceolate acuminate bracts; spike thick, pubescent, densely flowered, spiral; bracts much longer than the ovary, the lower ones as long as the recurved flowers: sepals and petals equal; lip entire, recurved, oblong, dilated and crenulate at the apex. — Muddy banks of rivers. Oct. — Stem 1° – 2° high. Lowest leaves 9′ – 15′ long. Flowers yellowish white, ½′ long, fragrant.

6. **S. præcox,** Wats. Stem tall and slender, pubescent above; lowest leaves linear, the upper small and bract-like; spike slender, pubescent, spiral; bracts ovate-lanceolate, acuminate, longer than the ovary; lip oblong, entire, recurved and crenulate at the apex, scarcely longer than the petals. — Low or marshy pine barrens, Florida to North Carolina. May. — Stem 1° – 2° high. Leaves 6′ – 10′ long. Flowers 3″ long, white.

7. **S. gracilis,** Bigelow. Stem very slender, smooth throughout, scape-like; lowest leaves (early withering) lanceolate or elliptical, spreading; spike very slender; flowers small, on one side of the rachis or sparingly spiral, smooth; bracts ovate-lanceolate, clasping, shorter than the capsule; lip finely crenulate on the margins, recurved and acute at the apex; anthers 4-cleft. — Low ground. April – May. — Stem sheathed, 6′ – 12′ high. Lowest leaves 1′ – 2′ long. Flowers 1″ long.

21. GOODYERA, R. Br. RATTLESNAKE PLANTAIN.

Sepals and petals nearly equal, the two lateral sepals including the base of the sessile lip, the upper one connivent with the petals. Lip concave or sac-like, contracted above the middle into a recurved and channelled point. Anther attached to the dorsal apex of the short and free column. Pollen masses 2, entire, powdery. — Stems scape-like, from a slender creeping rootstock, bearing a spike of small white flowers.

1. **G. pubescens,** R. Br. Scape pubescent; radical leaves thick, ovate, discolored and reticulated above, contracted into a spreading petiole; spike lanceolate, densely many-flowered, pubescent; bracts lanceolate; sepals and petals roundish; lip sac-like, ending in a short ovate point; stigma rounded. — Deep shady woods, Florida, and northward. August. — Scape 1° high. Leaves 2′ long. Spike 2′ – 4′ long.

2. **G. repens,** R. Br. Low; scape slender, pubescent; radical leaves ovate or oblong-ovate, reticulated; spike slender, loosely few-flowered, 1-sided or somewhat spiral; bracts linear-lanceolate; lip sac-like, ending in an oblong point; stigma 2-toothed. — Shady woods, on the mountains of North Carolina, and northward. August. — Scape 5′ – 8′ high. Leaves 1′ long.

22. PHYSURUS, Richard.

Sepals free, the lateral spreading, the middle one erect, adhering to the petals. Lip spurred, concave toward the base, dilated above. Column very short. Anther dorsal, beaked. Pollen masses 2, entire, powdery.

1. **P. querceticola,** Lindl. Stem ascending; leaves thin, ovate or oblong-ovate, acute, on slender petioles, which are dilated, membranaceous and sheathing at the base; spike short, oblong, densely flowered; bracts scarious, oblong-ovate, mostly shorter than the flowers; sepals and petals oblong, obtuse; lip concave, ending in a broadly ovate acuminate and recurved point; spur pouch-like, shorter than the ovary; stigma 2-lobed. — Low shady woods, Florida, and westward. August. — Plant tender, 6′ – 12′ high. Leaves and spike 1′ long.

23. LISTERA, R. Br.

Sepals and petals alike, spreading or reflexed. Lip longer than the sepals, 2-cleft. Column short. Stigma with a rounded beak. Anther ovate, attached to the dorsal summit of the column. Pollen masses 2, powdery. — Stems low, from clustered fibres, bearing two opposite sessile leaves, and a loose raceme of small greenish flowers.

1. **L. australis,** Lindl. Leaves ovate or oblong-ovate, closely sessile; raceme smoothish, few – several-flowered; bracts minute; lip linear, 3 – 4 times as long as the sepals, deeply 2-cleft, the divisions filiform; column very short. — Wet shady woods, Florida, and northward. July. — Stem 4′ – 8′ high. Leaves ½′ – 1′ long.

2. **L. convallarioides,** Hook. Leaves broadly cordate or roundish; raceme pubescent, few-flowered; bracts half as long as the pedicels; lip oblong-obovate, 2-lobed at the apex, and 2-toothed at the base, twice as long as the sepals; column manifest. — Damp mossy woods, on the mountains of North Carolina. July. — Stem 4′ – 8′ high. Leaves ½′ – 1′ long.

24. PONTHIEVA, R. Br.

Sepals and petals nearly alike, the two outer sepals spreading, the upper one connivent with the petals. Petals, like the lip, adnate to the middle of the column. Lip posterior, clawed, ovate, concave, spreading. Column 2-lobed, beaked. Anther dorsal, linear, stalked, 4-celled. Pollen masses 4, linear, powdery. — Low herbs, with clustered roots, chiefly broad radical leaves, and greenish flowers on a pubescent scape.

1. **P. glandulosa,** R. Br. Leaves many-nerved, oblong, spreading, narrowed into a short petiole; scape slender, many-flowered; bracts lanceolate; lateral sepals flat. — Low shady woods, Florida to North Carolina. Sept. – Oct. — Scape 1° – 1½° high.

25. CYPRIPEDIUM, L. LADY'S SLIPPER.

Sepals 3, the two lower ones mostly united into one under the lip, spreading. Petals narrower. Lip large, inflated, and sac-like. Column short, 3-lobed, the two lateral lobes each bearing a 2-celled anther on the under side, the middle one (sterile stamen) petal-like. Pollen granular. Stigma thick, triangular. — Root fibrous. Leaves large, plaited, sheathing. Flowers large, mostly solitary, leafy-bracted, nodding.

* *Stem leafy: sepals and petals longer than the yellow lip, the latter linear and twisted.*

1. **C. pubescens,** Willd. Pubescent; stem sheathed at the base; leaves 4 – 6, ovate-oblong, acute or acuminate; flowers 1 – 3; sepals greenish, striped with deeper lines, lanceolate, acuminate, the lower sometimes 2-cleft at the apex; petals linear, spirally twisted; lip large (1′ – 1½′ long), laterally flattened, spotted within; stigma triangular, obtuse. — Rich woods in the upper districts. May – June. — Stem 1° – 1½° high. Leaves 4′ – 6′ long. Flowers inodorous.

2. **C. parviflorum,** Salisb. Very near the preceding, but every way smaller; lip half as large, depressed above; stigma triangular, acute; flowers fragrant. — Rich woods in the upper districts. May – June.

* * *Stem leafy: sepals and petals white, flat, obtuse, not longer than the lip.*

3. **C. spectabile,** Swartz. Pubescent; leaves 6 – 7, oval, acute; sepals oval or oblong, rather longer than the lanceolate petals; lip (1½′ long) much inflated, white tinged with purple, about as long as the sepals. — Mountains of North Carolina. May – June. — Stem 2° high, commonly 2-flowered. Leaves 4′ – 6′ long. Flowers very showy.

* * * *Scape naked, 1-flowered, 2-leaved at the base.*

4. **C. acaule,** Ait. Pubescent; leaves oblong, obtuse; sepals greenish, oblong-lanceolate, acute, nearly as long as the linear petals, much shorter than the large (2′ long) obovate purple and veiny lip. — Dry woods in the upper districts. May – June. — Scape 8′ – 12′ high. Leaves 6′ long.

ORDER 145. CANNACEÆ. (CANNA FAMILY.)

Perennial herbs, destitute of aroma, with alternate sheathing leaves, the very numerous nerves parallel, and diverging from the strong midrib, and superior irregular monandrous flowers. Sepals 3. Corolla 6-parted; the three exterior divisions alike, the three interior ones very unequal, and often variously imperfect. Stamen and stigma mostly petal-like. Anther 1-celled. Ovary 1 – 3-celled, with 1 to many anatropous or campylotropous ovules. Embryo straight or hooked, in hard albumen. — Rhizoma often tuberous, and abounding in starch.

1. THALIA, L.

Calyx minute. Corolla tubular; the three exterior divisions similar and equal; the interior unequal; the anterior one broad and hooded, the interior lateral one elongated and clawed, the exterior lateral one furnished with two bristles on one side, and partly adnate to the slender stamen on the other.

Style thick, spiral: stigma perforated, 2-lipped, the lower lip long and pendent. Capsule utricular, 1-celled, 1-seeded. Seed ovoid, erect, campylotropous. Embryo hooked, in hard albumen. — Stemless herbs from fibrous roots. Scape elongated. Petioles terete, dilated and sheathing at the base. Flowers in bracted panicled spikes, commonly two together, and included in a 2-valved spathe.

1. **T. dealbata,** Roscoe. Plant dusted over with a minute white powder, otherwise smooth; leaves distichous, long-petioled, cordate-ovate, acute; scape terete, reed-like; panicle erect, dense, smooth, the branches not longer than the lanceolate deciduous bracts at their base; spikes erect; valves of the spathe unequal, ovate, coriaceous; flowers small, purple. — Ponds and marshes, South Carolina, and westward. June – Sept. — Scape 3° – 5° high. Leaves 6′ – 9′ long, on petioles 1° – 2° long.

2. **T. divaricata,** Chapm. Plant not powdery; leaves oblong-ovate, acute, rounded at the base, long-petioled; panicle large, divaricate, the branches much longer than the linear deciduous bracts, hairy at the joints; spikes 6 – 10-flowered, zigzag, pendulous; valves of the spathe unequal, oblong, membranaceous, hairy; flowers small, purple; seed ovoid, enclosed in a loose membranaceous pericarp. — Ponds, Apalachicola, Florida. Sept. – Oct. — Scape 5° – 10° high. Leaves 1° – 2° long. Panicle 2° – 4° wide, purplish.

2. CANNA, L. Indian Shot.

Sepals 3. Corolla 6-parted; the three exterior divisions equal; the interior bilabiate, with the upper lip 2 – 3-parted, or sometimes wanting, the lower entire. Filaments petal like. Anther marginal. Ovary 3-celled, many-ovuled. Style petal-like. Stigma marginal. Capsule covered with a dense bristly coat, 3-celled, loculicidally 3-valved. Placentæ central. Seeds globose, anatropous. Embryo straight in horny albumen. — Stems leafy. Leaves narrowed into a sheathing petiole. Flowers spiked, showy.

1. **C. flaccida,** Roscoe. Stem erect from a creeping rootstock; leaves ovate-lanceolate, narrowed into a sheathing petiole; spike few-flowered; sepals lanceolate, half the length of the tube of the funnel-shaped corolla; inner divisions of the corolla obovate, flaccid; capsule few-seeded. — Miry swamps, Florida to South Carolina, near the coast. June – August. — Stem 2° – 4° high. Leaves 9′ – 15′ long. Corolla 3′ – 4′ long.

Order 146. AMARYLLIDACEÆ. (Amaryllis Family.)

Chiefly stemless smooth and succulent herbs, with linear leaves, and smooth (not scurfy or woolly) often showy flowers. — Sepals and petals united to form a 6-parted corolla-like perianth, imbricated in the bud, the tube adnate to the 3-celled ovary. Stamens 6: anthers introrse. Ovules anatropous, attached to the central placentæ. Style single. Fruit 1 – 3-celled, valvular or indehiscent. Embryo straight in fleshy albumen, the radicle resting on the umbilicus.

Synopsis.

* Root bulbous.

1. **ZEPHYRANTHES.** Tube of the perianth short, crownless. Stigmas 3.
2. **HYMENOCALLIS.** Tube of the perianth elongated. Stamens connected with a cup-shaped crown. Stigma entire.
3. **CRINUM.** Tube of the perianth elongated, crownless. Stigma entire.

* * Root tuberous.

4. **AGAVE.** Capsule 3-valved. Flowers spiked. Leaves thick and fleshy.
5. **HYPOXYS.** Capsule circumscissile. Flowers umbelled. Leaves grass-like.

1. ZEPHYRANTHES, Herb.

Perianth corolla-like, bell-shaped or funnel-shaped, 6-parted, spreading above, naked at the throat, the tube short or wanting. Stamens free: anthers versatile. Style elongated, declining: stigma 3-cleft. Capsule 3-valved, many-seeded. Seeds black, compressed or angled. — Scape erect from a coated bulb, ending in a 1 – 2-leaved 1-flowered spathe.

1. **Z. Atamasco,** Herb. (Atamasco Lily.) Scape terete, somewhat lateral, 1-flowered; leaves linear, concave, fleshy; spathe 1-leaved, 2-cleft; perianth short-stalked, bell-shaped, white tinged with purple; style longer than the stamens; seeds angled. — Rich damp soil, Florida, and northward. March – April. — Scape 6′ – 12′ high, commonly shorter than the glossy leaves. Flower 2′ – 3′ long.

2. **Z. Treatiæ,** Watson. Bulb small; leaves very narrow (1½″ wide), thick, semiterete, with rounded margins, not shining; scape 4′ – 12′ high; flowers 3′ long, white, the segments rather obtuse; capsule broader than long, its peduncle 3″ – 9″ long. — Low ground, East Florida. April – May.

3. **Z. Simpsoni,** Chapm. Bulbs 1′ in diameter, globose; leaves concave, 1″ – 2″ wide; scapes 1 – 3, slightly compressed, 9′ – 12′ high; spathe entire, half as long as the perianth; perianth 1½′ long, pale pink, the oblong-obovate divisions apiculate at the rounded apex; stamens and style equal, included; ovary short-pedicelled, many ovuled. — Low pine barrens, South Florida (*J. H. Simpson*).

2. HYMENOCALLIS, Salisb. Spider Lily.

Perianth corolla-like, 6-parted; the narrow divisions spreading; the tube slender and elongated. Stamens united below with a cup-shaped or funnel-shaped variously toothed crown, exserted: anthers versatile, linear. Style elongated, declining: stigma entire. Capsule membranaceous, 3-celled, bursting irregularly before the maturity of the corm-like seed. — Scape from a coated bulb, compressed or 2-edged, bearing the large and fragrant leafy-bracted white flowers in a cluster at the apex. Leaves succulent.

* *Scape* 6 – 12-*flowered.*

1. **H. occidentalis,** Kunth. Glaucous; leaves erect, lanceolate, 1° long; scape slightly compressed and 2-edged, 1½° – 2° high, mostly 6-flowered; tube of the perianth 3′ long, about the length of the linear-lanceolate widely spreading divisions; crown about half as long, the broad truncate lobes

coarsely toothed. — Along streams, often in dry soil, Middle Florida to Tennessee. July.

2. **H. Caribæa,** Herb. Leaves erect-spreading, widening upward, 2° – 3° long, 3′ wide; scape longer than the leaves, strongly compressed, sharply 2-edged, 1′ – 1½′ wide, 8 – 12-flowered; tube of the perianth 6′ long, mostly longer than the linear recurved divisions; crown ¼ the length of the divisions, funnel-shaped, truncate and slightly toothed between the stamens. — Sandy coast, South Florida. July – August.

* * *Scape 1 – 4-flowered.*

3. **H. coronaria,** Kunth. Bulb without runners; leaves linear-strap-shaped, flat above, half-cylindrical near the base; scape solitary, green, 2-edged, 4-flowered; divisions of the perianth linear, spreading, white; crown large, funnel shaped, with six truncate lobes at the stamens, and several fine teeth at the sinuses. — Rocky islets in the Savannah River at Augusta, and in the Congaree at Columbia (*Leconte*). — Scape and leaves 2° long.

4. **H. lacera,** Salisb. Bulb stoloniferous; leaves erect, widening upward, 1° – 1½° long, 10″ – 15″ wide, as long as the slightly compressed, sharply 2-edged, 2- (rarely 3 – 4-) flowered scape; divisions of the perianth linear, spreading or recurved; 2′ – 4′ long, about equalling the tube, the exterior greenish; crown soon bowl-shaped, lobed and coarsely toothed between the stamens. (Pancratium rotatum, *Auct.*) — Marshes and wet banks. April – May.

Var. **minor.** Widely stoloniferous; leaves 6″ – 10″ wide, longer than the 2-flowered scape. (P. rotatum, var. minor, *Leconte.*) — Miry river banks along the coast of Florida. April.

5. **H. crassifolia,** Herb. Bulb large, with short stolons; leaves erect, strap-shaped, 2° long; scape thick, glaucous, rather longer than the leaves, 2-flowered; tube of the perianth, 3′ – 4′ long, thick, shorter than the greenish white broadly linear spreading divisions; crown large, funnel-shaped, one third as long as the divisions, coarsely toothed between the filaments. — Wet pine barrens, Florida. May.

6. **H. Palmeri,** Watson. Bulb small; leaves very narrow (3″ wide); scape slender (8′ – 10′ long), 1-flowered; tube of the perianth as long as the narrow divisions; crown tubular-funnel-shaped, sharply toothed between the stamens. — Biscayne Bay, South Florida (*Palmer*).

7. **H. humilis,** Watson. Bulb larger; leaves broader; scape 1-flowered, nearly as long as the leaves; perianth greenish, the tube much shorter than the narrow divisions; crown broadly funnel-shaped (8″ long), truncate between the stamens. — Indian River, South Florida (*Palmer*).

3. CRINUM, L.

Tube of the perianth crownless at the apex. Otherwise like the preceding both in character and habit.

1. **C. Americanum,** L. Leaves strap-shaped, remotely denticulate; scape 2 – 4-flowered; flowers large, fragrant; leaves of the perianth white, lanceolate, shorter than the green tube; ovules 3 in each cell, erect; capsule

globose, indehiscent; 1 – 6-seeded; seed large, corm-like. — River swamps, Florida, and westward. May – Sept. — Scape 1° – 2° high. Perianth 6′ – 8′ long.

4. AGAVE, L.

Perianth corolla-like, funnel-shaped, 6-parted, persistent. Stamens exserted: anthers linear, versatile. Style filiform, exserted: stigma 3-angled or 3-lobed. Capsule coriaceous, 3-lobed, 3-celled, loculicidally 3-valved, many-seeded. Seeds flat, black, and shining, attached to the central placentæ — Scape bracted. Leaves fleshy, spiny or cartilaginous on the margins. Flowers in simple or panicled spikes, bracted.

1. **A. Virginica,** L. Stemless; leaves lanceolate, thick and rigid, spine-pointed, denticulate on the margins; scape simple, smooth; flowers small, yellowish, scattered in a simple spike; perianth strongly nerved; filaments and style spotted. — Sterile soil. July. — Scape 3° – 5° high. Leaves 6″ – 12″ long. Capsule globose, 3-lobed.

2. **A. rigida,** Miller, var. **Sisalana,** Engelm. Caulescent; leaves (4° – 6° long) linear-lanceolate, unarmed, the terminal spine not decurrent; scape leafy-bracted (15° – 20° high); panicle horizontal, the clustered flowers often viviparous; corolla funnel-shaped; stamens and style exserted. — Sandy coast of South Florida.

5. HYPOXYS, L. STAR-GRASS.

Perianth 6-parted, persistent, the spreading divisions colored within. Stamens short, unequal: anthers erect. Ovary 3-celled, with the amphitropous ovules attached to the central placentæ in two rows. Style short and thick: stigmas 3. Capsule opening transversely near the summit, the upper portion, with the withered perianth, falling off like a lid. Seeds globular, with a beak-like projection near the base. Radicle inferior. — Low pubescent herbs, from a tuberous root, with grass-like leaves, and a naked scape, bearing the few yellow flowers in a terminal bracted raceme.

1. **H. erecta,** L. Hairy; leaves linear, channelled; scapes 1 – 4, filiform, 2 – 4-flowered; bracts subulate, much shorter than the slender unequal pedicels; divisions of the perianth oblong, greenish and hairy without, yellow within. — Low ground, chiefly in the upper districts. March – April. — Scapes 2′ – 9′ long. Leaves at length much longer than the scape. Flowers 8″ wide.

2. **H. rigida,** Chapm. Villous; leaves rigid, erect, channelled, ½″ – 2″ wide; scapes 1 – 6, compressed, 1 – 3-flowered; perianth 4″ – 8″ wide, longer than the stout erect pedicel; capsule globose, few-seeded. — Low pine barrens, near the coast, West Florida. May.

3. **H. decumbens,** L.? Leaves glabrous, spreading or prostrate, 3″ – 5″ wide; scapes 3 – 5, filiform, sparsely villous, 2-flowered; perianth as long as the erect pedicel, ½′ wide; capsule linear-oblong, many-seeded. — River banks, Florida, and westward. June.

4. **H. juncea,** Smith. Sparingly hairy; leaves filiform; scapes 1 – 3, filiform, 1 – 2-flowered; bracts bristle-like, shorter than the villous pedicels;

divisions of the perianth oblong, hairy without; seeds black, minutely pitted. — Low pine barrens, in the lower districts. March – April. — Scape 4′ – 9′ long, at length procumbent. Flowers 9″ – 12″ wide.

ORDER 147. HÆMODORACEÆ. (BLOODWORT FAMILY.)

Perennial fibrous-rooted herbs, with leafy or scape-like stems, mostly equitant and sword-shaped leaves, and regular woolly or scurfy flowers. — Perianth tubular, 6-cleft, more or less cohering with the 3-celled ovary. Stamens 3 or 6: anthers adnate, introrse, 2-celled. Ovules mostly few, anatropous or amphitropous, attached to the central placentæ. Styles 3, united, deciduous, or persistent and separating: stigma entire. Capsule enclosed in the persistent perianth, loculicidally 3-valved at the apex. Embryo small, in hard albumen.

Synopsis.

1. **LACHNANTHES.** Perianth woolly: stamens 3: style deciduous: flowers cymose: stem leafy.
2. **LOPHIOLA.** Perianth woolly: stamens 6: style persistent: flowers corymbose: stem leafy.
3. **ALETRIS.** Perianth scurfy: stamens 6: style persistent: flowers spiked: stem scape-like.

1. LACHNANTHES, Ell.

Perianth woolly without, 6-lobed; with the exterior lobes smaller; the tube adnate to the ovary. Stamens 3, slender, exserted: anthers linear. Style filiform, declined, deciduous: stigma entire. Capsule globose, 3-angled. Seeds amphitropous, few, thin, orbicular, concave, fixed by the middle to the thick globose placentæ. — A leafy-stemmed perennial, with orange-colored juice.

1. **L. tinctoria,** Ell. Root red, fibrous; stem mostly simple, villous above; leaves linear-sword-shaped, smooth, the lower ones crowded and equitant, the others smaller and remote; flowers 2-ranked, crowded in lateral and terminal compound woolly cymes, yellow within; exterior lobes of the perianth linear; valves of the capsule separating from the placentæ; seeds black. — Ponds and ditches. July – Sept. — Stem 2° – 3° high. Leaves 1° – 1½° long. Flowers ¼′ long

2. LOPHIOLA, Ker.

Perianth woolly without, and at the throat within, nearly equally 6-lobed, spreading; the tube adnate to the lower half of the ovary. Stamens 6, slender: anthers oblong. Style subulate, erect, persistent and separable: stigma entire. Capsule ovate, coriaceous, 3-ribbed and 3-furrowed. Seeds anatropous, few, linear-oblong, curved, fixed at the base.

1. **L. aurea,** Ker. Stem erect, finely pubescent above, mostly simple; lowest leaves linear-sword-shaped, acute, equitant, the others diminishing upward, remote; flowers small, yellow within, in corymbose woolly racemes. — Wet pine barrens, Florida, and northward. July. — Stem 2° high, creeping at the base. Leaves 4′ – 12′ long. Flowers 3″ long, nodding in the bud.

3. ALETRIS, L. Star-grass.

Perianth tubular, scurfy and viscid without, smooth within, 6-cleft, the tube adnate to the base of the ovary. Stamens 6, very short, included: anthers sagittate. Style subulate, erect, persistent, and separable: stigmas 3. Capsule ovate, coriaceous. Seeds ovate, ribbed, fixed at the base. — Perennial herbs, with slender scape-like linear-bracted stems, bearing at the base a cluster of flat spreading leaves, and at the summit numerous small white or yellow flowers in a spiked raceme.

1. **A. farinosa,** L. Leaves lanceolate; spike short (3′ – 12′), rigid; perianth white or yellow, cylindrical; style slender; capsule ovate-lanceolate. — Low ground. May – June. — Scape 2° – 3° high. Leaves 3′ – 6′ long. Perianth 4″ long.

2. **A. aurea,** Walt. Leaves ovate-lanceolate; spike elongated (1° – 2°), slender; perianth white or yellow, globose-ovate; style short; capsule ovate. Low sandy soil. May – June. — Scape 2° – 3° high. Leaves 2′ – 4′ long. Perianth 2″ – 3″ long.

Order 148. BROMELIACEÆ. (Pine-Apple Family.)

Chiefly scurfy epiphytes, with fibrous roots, rigid leaves, and regular conspicuously bracted mostly spiked flowers. — Perianth free, or more or less adnate to the 3-celled ovary, 6-parted, imbricated, the three outer divisions calyx-like. Stamens 6: anthers 2-celled, introrse. Ovules numerous, anatropous, erect or pendulous. Placentæ central. Style single: stigmas 3. Fruit berry-like, or 3-celled, 3-valved capsule. Seeds stalked. Embryo small, at the base of copious mealy albumen.

1. TILLANDSIA, L. Long Moss, Air Plant.

Sepals rigid. Petals imbricated and tube-like below, spreading above. Stamens filiform, hypogynous. Ovary free. Style slender. Capsule linear or linear-oblong, cartilaginous, septicidally 3-valved, each valve separating into 2 plates. Seeds erect, club-shaped, pointed, raised on a long and hairy stalk. — Radical leaves mostly crowded, imbricated. Petals fugacious.

* *Stem rigid, erect: flowers spiked.*

+ *Flowers scattered: spikes flexuous.*

1. **T. utriculata,** Leconte. Leaves scurfy and glaucous, subulate and recurved at the summit, very much dilated, concave and imbricated at the base, shorter than the rigid mostly branching stem; the uppermost small and sheathing; sepals oblong-linear, obtuse, longer than the bracts, much shorter than the capsule; petals white, twice as long as the sepals; stamens exserted. — South Florida. June – July. — Stem 2° – 3° high.

2. **T. flexuosa,** Swartz. Scurfy ($1\frac{1}{2}$° – 2° high); leaves rigid (1° long), very broad and spirally imbricated below the middle, and crossed with lines

of gray and red, abruptly attenuate above, the upper ones oblong, acute; stem dark red, branching, the spikes few-flowered; capsule twice the length of the bright red sepals; petals pale red. — Miami, South Florida (*Garber*). Sept. – Oct.

+- +- *Flowers contiguous, or distichously imbricated.*

++ *Leaves broad, attenuate.*

3. **T. Houzeavi,** Morren (ined.). Scurfy (10′ – 20′ high); leaves rather tender, lanceolate-subulate, concave, spreading (8′ – 12′ long), the upper ones passing into the oblong acute bracts; stem mostly simple; spikes linear, closely many-flowered; capsule linear, thrice the length of the lanceolate sepals; petals pale blue. — Shady river banks, South Florida. Oct.

4. **T. fasciculata,** Swartz. Leaves scurfy, concave, gradually narrowed upward; the uppermost reduced to ovate pointed bracts; stem longer than the leaves; spikes 3 – 8, compressed, 2-edged, red; bracts ovate, closely imbricated in two rows, keeled on the back, longer than the linear acute keeled sepals. — South Florida. — Stem 2° high. Leaves 1° – 1½° long. Petals blue.

5. **T. pruinosa,** Swartz. Small, very scurfy; leaves broad and clasping at the base, concave, imbricated, nearly equal, shorter than the spike; spike simple, few-flowered; bracts oblong, imbricated in two rows, longer than the sepals, and half as long as the capsule. — South Florida. — Stem stout, 4′ high. Spike 3′ – 4′ long, 6 – 7-flowered. Leaves 3′ – 4′ long. Corolla purplish blue.

++ ++ *Leaves linear or filiform: flowers blue.*

6. **T. angustifolia,** Swartz.? Glabrate; stem simple, 10′ – 15′ high, leaves longer than the stem, linear-filiform, recurving, the uppermost passing into the bracts; spikes 1 – 4, 2′ – 4′ long; bracts erect-spreading, ovate-oblong, rounded on the back, ⅓ as long as the corolla; calyx with two of the sepals partly united; stigmas fimbriate; capsule exserted. (T. juncea, *Leconte.*) — Along the St. John's River, East Florida.

7. **T. Balbisiana,** Schultes. Nearly glabrous; stem slender, 1° – 1½° high, dark red, like the bracts; leaves exceeding the stem, linear-filiform, dilated at the concave loosely imbricated, bulb-like base; spikes 1 – 2, 2′ – 4′ long, few-flowered; bracts closely imbricated, cuspidate, keeled, as long as the calyx, and ⅓ as long as the linear capsule. — Shady hammocks, South Florida. — Petals blue.

8. **T. setacea,** L. Scurfy or glabrate, cæspitose; stem drooping, 1° long; leaves spreading, linear-setaceous, as long as the stem, the upper erect; spike single, 2 – 4-flowered, 2′ – 3′ long; bracts distichous, acute, 8′ – 10′ long, as long as the calyx, and ½ as long as the capsule. — South Florida. — Clusters turning red in sunny exposure.

Var. **tenuifolia.** Stem and leaves erect, scurfy; spikes 1 – 4, few-flowered. (T. Bartramii, *Ell.*) — River swamps, in deep shade, Georgia and Florida.

* * *Stem branching: spikes peduncled: flowers blue.*

9. **T. recurvata,** L. Stems cæspitose, 3′ – 6′ long; leaves 2-ranked, recurved, filiform, scurfy, 2′ – 3′ long; peduncles axillary, 1 – 2-leaved, gla-

brous, 1 – 2-flowered, longer than the stem; style short; stamens included. — East Florida, and westward.

* * * *Stems filiform, pendent: flowers solitary, green.*

10. **T. usneoides,** L. (Long Moss.) Scurfy and hoary; stems (1° – 2° long) branching, spiral; leaves 2-ranked, linear-awl-shaped, recurved; flowers small; peduncles lateral, shorter than the leaves, small; sepals longer than the bracts, half as long as the linear recurved green petals. — Humid situations in the lower districts, Florida to North Carolina, and westward. June – Sept.

2. CATOPSIS, Griseb.

Mostly like Tillandsia, but the stigmas nearly sessile, the stipe incurved, and dissolved into flexuous hairs from the base, the pappus spreading from the hilum, and the pendulous seed ending in a blunt coma.

1. **C. nutans,** Griseb. Not scurfy; stem usually nodding (2° – 3° long); leaves thin, smooth, ovate-lanceolate, attenuate, pale (10′ – 15′ long); calyx ovate, sessile on the flexuous branches of the simple panicle, longer than the ovate bracts; sepals oblong-oval, obtuse, enclosing the white spatulate petals; capsule ovate. — Miami, South Florida (*Garber*), mostly on low trees.

ORDER 149. IRIDACEÆ. (IRIS FAMILY.)

Herbs, with linear or sword-shaped equitant nerved leaves, and fugacious often showy flowers from a 2-leaved spathe. — Perianth 6-parted, the divisions spreading and equal, or the inner ones smaller, convolute in the bud. Stamens 3, distinct or united: anthers extrorse. Ovary adnate to the tube of the perianth, 3-celled; the numerous anatropous ovules fixed to the central placentæ. Style single: stigmas 3. Capsule loculicidally 3-valved. Embryo in the axis of fleshy albumen.

Synopsis.

1. IRIS. Stigmas petal-like, covering the stamens: capsule angular.
2. SISYRINCHIUM. Stigmas filiform: capsule globular: stem flat.
3. NEMASTYLIS. Stigmas filiform, 2-parted: stem terete.

1. IRIS, L. Blue Flag, Flower-de-Luce.

Perianth corolla-like, 6-parted; the exterior divisions recurved, and often crested or bearded within, the interior mostly smaller and erect. Stamens 3, opposite the outer divisions of the perianth, concealed by the dilated petal-like 2-lipped spreading stigmas. Style 3-angled. Capsule 3 – 6-angled. Seed numerous, flattened, packed in 1 – 2 rows in the cells. — Perennial herbs, with creeping or tuberous rootstocks, simple or branched stems, linear or sword-shaped leaves, and showy flowers from a scarious spathe.

* *Stems tall, leafy: divisions of the perianth unequal.*

1. **I. versicolor,** L. Stem nearly terete, simple or branched; leaves sword-shaped; flowers terminal, single or spiked, crestless; perianth pale blue,

variegated with white, yellow, and purple, the inflated tube shorter than the obtusely 3-angled ovary; lips of the stigmas entire or slightly crenate; capsule oblong, obtusely 3-angled. — Wet places. April – May. — Stem 1½° – 2° high Lowest leaves 1½° – 2° long, 1′ – 1½′ wide. Perianth 2′ long.

2. **I. Caroliniana,** Watson. Stem slender, 2° high; leaves thin, bright green; flowers in pairs; perianth lilac, veined with purple, the tube shorter than the ovary; capsule oblong, round-angled; seeds large (4″ – 5″ broad), in a single row in each cell. — Wilmington, North Carolina (*Watson*). — Leaves 3° long. Perianth 3′ long.

3. **I. hexagona,** Walt. Stem terete, simple; leaves linear-sword-shaped; flowers axillary and terminal, solitary, crested; perianth deep blue, variegated with white, yellow, and purple; the cylindrical angular tube longer than the 6-angled ovary; stigmas much longer than the anthers, the large lips toothed; capsule oblong-cylindrical, 6-angled. — Swamps, Florida to South Carolina, near the coast. April. — Stem 2° – 3° high. Lowest leaves 2° – 3° long. Flowers 4′ long.

4. **I. cuprea,** Pursh. Stem simple, furrowed and 1-angled below; leaves linear-sword-shaped; flowers axillary and terminal, single or by pairs, crestless, dull yellow; tube of the perianth somewhat inflated, as long as the 6-angled ovary; stigmas scarcely longer than the anthers, the lips nearly entire; capsule tumid, 6-angled. — Swamps in the lower districts of Georgia (*Elliott*), and westward. April – May. — Stem 3° high. Leaves 2° long. Flowers 2′ long.

5. **I. tripetala,** Walt. Stem terete, simple, or with peduncle-like branches; leaves rather short, sword-shaped, glaucous; flowers terminal, solitary, crestless, blue, variegated with yellow and purple; inner divisions of the perianth very short, wedge-shaped; stigmas toothed; capsule oval, 3-angled. — Pine barren swamps, Florida to North Carolina. June – July. — Stem 1° – 2° high. Leaves 1° long. Flowers 2′ – 3′ long.

6. **I. Virginica,** L. Stem slender, simple; leaves elongated, grass-like; flowers 2 – 6, terminal, on a long and slender peduncle, crestless, blue and white; ovary 3-angled, 2-furrowed on the sides, much longer than the very short tube of the perianth; capsule 3-angled, acute at each end. — Swamps, North Carolina to Tennessee. June. — Stem and lower leaves 2° long. Flowers 1½′ long.

* * *Stems low, with sheath-like leaves: divisions of the perianth nearly equal.*

7. **I. verna,** L. Stem very short, concealed by the short spathe-like leaves, 1-flowered; proper leaves linear-sword-shaped, glaucous; perianth pale blue, crestless, the divisions about as long as the filiform partly concealed tube; capsule 3-angled. — Pine barrens of the middle districts, mostly in dry soil, Alabama to North Carolina. April. — Leaves 5′ – 8′ long. Limb of the perianth 1′ long.

8. **I. cristata,** Ait. Stem 1 – 3-flowered; leaves lanceolate (3′ – 5′ long); outer divisions of the perianth crested, much shorter than the filiform tube; capsule acutely 3-angled; otherwise like the preceding. — Mountains of Georgia and North Carolina. May.

2. SISYRINCHIUM, L. Blue-eyed Grass.

Perianth corolla-like, 6-parted, the divisions nearly equal, spreading. Stamens 3, monadelphous: anthers sagittate. Style short: stigmas 3, simple, filiform and involute. Capsule and seeds roundish. — Grass-like herbs, with fibrous roots, and scape-like 2-edged stems. Flowers small, in an umbellate cluster, successively developed from a rigid 2-leaved spathe. Perianth blue, with a yellow centre.

1. **S. anceps,** Cav. Stem branching and leafy above, 10′ – 15′ high; spathes two or more, long-peduncled, its leaves nearly equal. — Damp soil, Florida, and northward. July – Sept.

2. **S. angustifolium,** Mill. Stem simple, leafless, 6′ – 12′ high; spathe solitary, terminal, sessile, its leaves very unequal; flowers and fruit larger. — Mostly in dry soil in the upper districts. June – August.

3. NEMASTYLIS, Nutt.

Perianth 6-parted, the divisions nearly equal and spreading. Stamens 3, distinct, with the subulate filaments much shorter than the elongated linear anthers. Style short, 3-lobed, with the lobes 2-parted, each division produced into filiform radiating stigmas. Capsule oblong, truncated. — Herbs with coated bulbous roots, linear plicate leaves, and very fugacious flowers from a 2-leaved spathe.

1. **N. cœlestina,** Nutt. Bulb small, roundish; radical leaves few, elongated, sheathing; those of the stem diminishing upward, the uppermost bract-like; flowers mostly solitary, terminal; divisions of the perianth oblong-obovate; capsule obtusely 3-angled; seeds angular, brown. — Pine barrens, Florida, and westward. May – June. — Stem 1½° – 2° high. Flowers bright blue.

The Blackberry-Lily of the gardens (Balamcanda, Adans.) is occasionally seen spontaneous along roads and in waste ground.

Order 150. DIOSCOREACEÆ. (Yam Family.)

Twining herbs, with tuberous roots, ribbed and reticulated leaves, and small regular diœcious flowers, in axillary spikes or panicles. — Perianth 6-parted, the tube (in the fertile flower) adherent to the 3-celled ovary. Stamens 6: anthers 2-celled, introrse. Ovules anatropous, 1 – 2 in each cell. Styles 3, more or less united below. Fruit mostly capsular, 3 – 6-seeded. Embryo minute, in hard albumen.

1. DIOSCOREA, Plum. Yam.

Tube of the perianth 3-winged. Stamens inserted at the base of the limb. Capsule 6-seeded, membranaceous, 3-winged, opening septicidally through the wings. Seeds flat, broadly winged. — Leaves petioled, mostly cordate and entire. Petioles tumid at the base.

1. **D. villosa,** L. Stem smooth (10° – 15° long); leaves alternate, opposite, or whorled, broadly cordate, acuminate, 7 – 9-nerved, smooth, or pubescent beneath; flowers very small, whitish; the sterile ones in scattered clusters on the very slender branches of the axillary panicles; the fertile in a simple spike; capsule oval or obovate, strongly 3-winged, nodding. — Margins of swamps. July.

ORDER 151. SMILACEÆ. (SMILAX FAMILY.)

Herbs or climbing shrubs, not essentially distinct from the Lily Family, but with ribbed and veiny reticulated leaves, and separate styles or stigmas. — Leaves not sheathing, often bearing tendrils. Fruit baccate.

SUBORDER I. EUSMILACEÆ. (SMILAX FAMILY.) Flowers diœcious, in axillary and umbel-like clusters. Anthers 1-celled. Stigmas 1 – 3, sessile or nearly so. Ovules 1 – 2 in each cell of the ovary, orthotropous, suspended. — Tendril-bearing vines. Flowers small, leaves alternate.

1. **SMILAX.** Cells of the ovary 1-ovuled. Woody vines.
2. **COPROSMANTHUS.** Cells of the ovary 2-ovuled. Climbing herbs.

SUBORDER II. TRILLIACEÆ. (TRILLIUM FAMILY.) Flowers perfect, terminal. Anthers 2-celled. Styles or stigmas 3. Ovules several in each cell of the ovary, anatropous, horizontal. — Erect herbs. Leaves whorled.

3. **TRILLIUM** Exterior leaves of the perianth calyx-like, persistent. Stem 1-flowered. Leaves 3 in a whorl, terminal.
4. **MEDEOLA.** Leaves of the perianth alike, deciduous. Stem few-flowered. Leaves 3 – 7 in a whorl, lateral and terminal.

1. SMILAX, Tourn. CHINA BRIER.

Flowers diœcious. Perianth bell-shaped, 6-leaved, the leaves nearly equal and alike, deciduous. Stamens 6, inserted on the base of the perianth: anthers erect, 1-celled. Ovary free from the perianth, 1 – 3-celled, with a single orthotropous pendulous ovule in each cell. Stigmas 1 – 3 (mostly 3), sessile or nearly so, slender, spreading or recurved. Berry 1 – 3-celled, 1 – 3-seeded. Seeds globular or angled. Embryo minute, in horny albumen. — Woody and commonly thorny or prickly vines, climbing by means of a pair of tendrils attached to the petioles. Leaves alternate, ribbed, and reticulate-veined, mostly smooth and shining. Flowers small, greenish, in stalked axillary clusters.

* *Peduncles longer than the petioles or pedicels.*

← *Peduncles flattened: berry black.*

1. **S. tamnoides,** L. Stem scurfy when young, armed with stout subulate prickles; branches mostly unarmed, compressed – 4-angled; leaves deltoid-ovate, or hastate – 3-lobed, truncate or slightly cordate, rarely acute, at the base, 5 - 7-ribbed, often discolored; the margins, ribs, and petiole smooth, or fringed with fine prickles; peduncles about twice as long as the petioles;

stigmas 1 – 3, mostly solitary; berry commonly 1-seeded. — Swamps and thickets. May.

2. **S. Pseudo-China,** L. Lower part of the stem beset with numerous black needle-shaped prickles; branches unarmed, slightly angled; leaves ovate or round-ovate, often contracted in the middle, rounded or cordate at the base, abruptly pointed, more or less bristly-ciliate on the margins, 5-nerved; peduncles three times as long as the petioles, many-flowered; stigmas 3; berry 3-seeded. (S. panduratus, *Pursh.*) — Woods and thickets. April – May.

3. **S. glauca,** Walt. Stem armed with few and scattered prickles, very slender; branches terete, unarmed; leaves ovate or oval, entire, obtuse, mucronate, rounded or slightly cordate at the base, white beneath, 3 – 5-ribbed, the margins entire; peduncles very slender, 2 – 3 times as long as the petiole, few-flowered; stigmas 3; berry 3-seeded, glaucous. (S. caduca, *Willd.*) — Shady margins of swamps. May. — Leaves 2′ – 4′ long.

+ + *Peduncles terete: berry orange-yellow.*

4. **S. pumila,** Walt. Softly pubescent; stem low (1° – 3° high), terete, unarmed; leaves ovate or oblong, cordate, mucronate, persistent, mostly discolored and at length smooth above, pale beneath, 5-ribbed; peduncles about twice as long as the petioles, rigid, dense-flowered; stigma single; berry ovoid, 1-seeded. (S. pubera, *Michx.*) — Dry sandy soil, Florida to South Carolina, in the lower districts. Oct. — Rootstock creeping. Leaves 2′ – 4′ long.

* * *Peduncles not longer than the petioles.*

+ *Berries red.*

5. **S. Walteri,** Pursh. Stem low, armed with few scattered prickles near the base, otherwise unarmed; branches obscurely 4-angled, leaves deciduous, membranaceous, varying from oblong-lanceolate to oval, mucronate, acute, rounded or rarely slightly cordate at the base, 5-ribbed; peduncles flattened, as long as the petioles and pedicels; perianth rather large (3″ long), brownish; stigmas 3; berry globular, 3-seeded. (S. caduca, *Ell.*) — Pine barren ponds and swamps. March – April. — Rhizoma creeping. Leaves 2′ – 4′ long.

+ + *Berries black.*

6. **S. laurifolia,** L. Stem stout, armed with strong prickles; branchlets 1-angled, unarmed; leaves coriaceous, varying from ovate to lanceolate, obtuse, mucronate, 3-nerved; stigma solitary; berry globular, 1-seeded. — Swamps and margins of ponds. July – August. — Stem climbing high. Leaves 3′ – 5′ long. Berries maturing in the autumn of the succeeding year, very abundant.

7. **S. auriculata,** Walt. Stem commonly low and straggling, armed with short prickles; branches flexuous, 4-angled; leaves rigid, strongly 3-ribbed, varying from lanceolate to ovate, entire or hastate – 3-lobed, acute at each end; stigmas 2 – 3; berry small, 2 – 3-seeded. — Dry sand-ridges along the coast. May – June. — Stem trailing, or covering small bushes. Leaves 1′ – 2′ long, strongly reticulated. Flowers small, very fragrant.

8. **S. rotundifolia,** L. Stem climbing high, armed with scattered prickles; branchlets 4-angled; leaves thin, ovate or round-ovate, entire, ab-

ruptly pointed, mostly rounded or slightly cordate at the base; peduncles few-flowered, flattened; berry 3 seeded, blue-black. — Swamps in the middle and upper districts. June. — Plant yellowish green. Leaves 2′–4′ long.

9. **S. lanceolata,** L. Stem tall, mostly unarmed; branches terete; leaves evergreen, rather thin, varying from lanceolate to oblong-ovate, acute at each end, 5-ribbed, paler beneath; peduncle terete, as long as the petiole, many-flowered; stigmas 3; berry globular, 3-seeded. — Rich woods and margins of swamps. August. — Stem climbing high. Rootstock tuberous. Leaves 3′–4′ long.

10. **S. Havanensis,** Jacq. Branches angular, prickly; leaves coriaceous, ovate or roundish, obtuse or emarginate, 1½′–2′ long, the thick margins mostly prickly; peduncles as long as the petioles; flowers small, globose in the bud; berries "purple." — Coast of South Florida (*Curtis*).

2. COPROSMANTHUS, Torr.

Cells of the ovary 2-ovuled. — Stems herbaceous, unarmed. Peduncles and petioles elongated. Berry blue-black. Otherwise like Smilax.

1. **C. ecirrhatus.** Stem erect (1°–3° high), mostly simple, leafy above; leaves few, oblong or oval, mucronate, pubescent, 5-nerved, the upper ones whorled, the lower bract-like; peduncles few (3′–4′ long), below the leaves; berry 2–3-seeded. (Smilax ecirrhata, *Watson.*) — Dry fertile soil. June.

2. **C. peduncularis,** Kunth. Stems curving or climbing (3°–5° long), branched, leafy; leaves alternate, round-cordate, acuminate, smooth; peduncles numerous, axillary (4′–6′ long); berry 6-seeded. (Smilax, *Muhl.*) — Rich soil in the upper districts. June. — Flowers fetid.

3. **C. tamnifolius,** Kunth. Stems erect or climbing; leaves hastate, cordate, obtuse, mucronate, 5-nerved, smooth, the upper ones narrower; peduncles longer than the petioles; berry 2–3-seeded. (Smilax, *Michx.*) — Pine barrens, South Carolina, and northward. July.

3. TRILLIUM, L.

Flowers perfect. Perianth 6-leaved, the three exterior leaves calyx-like, persistent, the interior withering. Stamens 6, inserted at the base of the perianth. Filaments short: anthers adnate, linear, 2-celled. Ovary 6-ribbed, 3-celled, with numerous anatropous horizontal ovules in each cell. Styles or stigmas 3, slender, stigmatic within, recurved, persistent. Fruit a roundish 6-sided many seeded purple berry. — Low perennial herbs, with tuberous rootstocks, and simple mostly solitary stems, which are sheathed at the base, and terminated with a whorl of three broad leaves and a single sessile or peduncled showy flower.

* *Flower sessile, erect.*

1. **T. sessile,** L. Rootstock horizontal; leaves sessile, broadly oval, widest in the middle, abruptly short-pointed, narrowed at the base, 3–5-nerved, variegated above with paler and deeper green; petals dark purple, lanceolate, erect, much longer than the lanceolate spreading sepals. — Rich shady woods, in the upper districts, and northward. March–April. — Stem

6′ – 12′ high. Leaves 1′ – 3′ long. Petals 10″ – 15″ long, rarely green or yellowish.

2. **T. discolor,** Wray. Rootstock tuberous, vertical; stem stout; leaves sessile, varying from ovate-lanceolate to broadly ovate, tapering from near the base to the apex, 3 – 7-nerved, variegated above with green and brown or dark purple; petals erect, oblong, obtuse, narrowed below, dark purple varying into green, rather longer than the lanceolate, spreading sepals; filaments very short, purple. — Rich woods, in the middle and lower districts. Feb. – March. — Stem 6′ – 12′ high. Leaves 3′ – 5′ long. Petals 1½′ – 2′ long.

3. **T. recurvatum,** Beck. Stem (1° high) erect from a horizontal tuber; leaves oblong-ovate, acute, contracted into a short petiole, faintly mottled; petals purplish brown, erect (1½′ long), linear-spatulate, twice as long as the lanceolate reflexed sepals; filaments as long as the incurved anthers and the spreading stigmas. — Rich valleys of the mountains of Georgia. April.

Var.? **lanceolatum,** Watson. Leaves sessile, lanceolate; sepals less strictly reflexed; petals almost linear; filaments longer. — Georgia and Alabama, in the upper districts.

* * *Flower on an erect or declining peduncle.*

4. **T. pusillum,** Michx. Leaves sessile, lanceolate or oblong, obtuse, 3-nerved; peduncle erect, shorter than the spreading flower; petals lanceolate, pale flesh-color, acutish, one third longer than the lanceolate obtuse sepals; filaments slender, as long as the anthers; stigmas united below into a slender style, longer than the filaments. — Pine barrens in the low country of South and North Carolina. — Stem 6′ – 8′ high. Leaves 1½′ – 2′ long. Flower 8″ – 10″ long.

5. **T. erectum,** L. Leaves sessile, broadly rhomboidal, abruptly acuminate, acute at the base; peduncles longer than the spreading flowers (1½′ – 3′ long), at length declined; petals oval or oblong, obtuse or acutish, dark purple, rather longer than the lanceolate-ovate acute sepals; filaments shorter than the anthers, or the short and distinct stigmas. — Varies with smaller white or yellowish flowers. — Shady woods on the mountains of North Carolina. May, — Stem 1° high. Leaves 3′ – 5′ long, and of the same width. Flowers 1′ – 1½′ long, fetid.

6. **T. grandiflorum,** Salisb. Leaves rhombic-ovate, abruptly acuminate, nearly sessile; peduncle longer than the erect-spreading flower, erect or slightly declined; petals obovate, white, much longer and broader than the lanceolate acutish sepals; filaments slender, shorter than the anthers, nearly equalling the short recurved stigmas. — Shady woods on the mountains of Carolina (*Elliott*). May. — Stem 1° – 1½° high. Leaves 3′ – 5′ long. Petals 2′ long, changing to rose-color.

7. **T. erythrocarpum,** Michx. Leaves ovate, long-acuminate, rounded at the base, short-petioled; peduncle (1′ – 2′ long) erect, longer than the widely-spreading flower; petals oblong, acutish, wavy, much longer than the lanceolate sepals, white, striped with purple at the base; stigmas slender, longer than the anthers; berry red. — Rich shady woods in the upper districts. April – May. — Stem 1° high. Leaves 3′ – 5′ long. Flowers 9″ – 12″ long.

* * * *Flower on a recurved peduncle.*

8. **T. cernuum,** L. Stems clustered; leaves broadly rhomboidal, abruptly acuminate, short-petioled; peduncle mostly shorter than the small flower; petals white, oblong-ovate, acute, wavy, recurved, rather longer than the lanceolate sepals; stigmas short, distinct, exceeding the short erect anthers. — Shady woods in the upper districts. April–May. Stems 1°–1½° high. Leaves 2′–6′ long, and nearly as broad. Petals 8″–12″ long.

9. **T. stylosum,** Nutt. Leaves oval or oblong, acute, short-petioled; peduncle shorter than the large flower; petals rose-color, oblong, obtuse or abruptly pointed, wavy, spreading, much longer and broader than the lanceolate sepals; stigmas slender, united below the middle, much shorter than the long recurved anthers. — Low shady woods in the middle and upper districts, Georgia to North Carolina. April–May. — Stem 1°–1½° high. Leaves 4′ long. Petals 1½′–2′ long.

4. MEDEOLA, Gronov.

Flowers perfect. Leaves of the perianth 6, similar, deciduous. Stamens 6, erect, hypogynous: anthers linear oblong, fixed near the base, introrse. Ovary globose, 3-celled, with six anatropous ovules in each cell. Styles 3, slender, recurved, stigmatic within. Berry globose.

1. **M. Virginica,** L. Rhizoma horizontal, tuberous; stem simple, slender, clothed with loose deciduous wool, bracted below, bearing above the middle a whorl of 6–8 oblong-lanceolate acute leaves, and at the summit a smaller whorl of 3–4 ovate leaves, which surround the 2–8 small greenish nodding flowers; styles red. — Shady banks, Middle Florida, and northward. June. — Stem 2° high.

ORDER 152. ROXBURGHIACEÆ. (ROXBURGHIA FAMILY.)

Herbs or twining shrubs, with petioled parallel-nerved reticulated leaves, and perfect axillary racemose flowers. — Perianth 4-leaved or 4-parted. Stamens 4, hypogynous: anthers 2-celled, introrse. Ovary free, or united with the base of the perianth, 1-celled. Stigma sessile. Ovules few or numerous, anatropous. Placenta parietal. Capsule 2-valved. Seeds fixed to hairy or fibrillous cords, erect or pendulous. Embryo minute or slender, in fleshy albumen.

1. CROOMIA, Torr.

Perianth deeply 4-parted, persistent. Stamens 4, opposite the lobes: anthers short, oblique. Ovary globose-ovate, sessile. Stigma 2-lobed. Ovules 4–6. Fruit follicular, beak-pointed, at length 2-valved. Seeds 1–4, obovate, suspended from the apex of the nerve-like at length free placenta, nearly covered by the fibres of the cord. Embryo minute. — A low perennial herb, from a slender creeping rhizoma. Stem simple, sheathed at the base, leafy at the summit. Leaves 4 – 6, alternate, oblong-cordate, 5 – 9-ribbed. Peduncles axillary, few-flowered. Flowers small, greenish, on jointed nodding pedicels.

1. **C. pauciflora,** Torr. — Shady woods, Florida, Georgia, and Alabama. April. — Stem 6′ – 12′ high. Leaves 2′ – 4′ long, thin, spreading.

ORDER 153. LILIACEÆ. (LILY FAMILY.)

Chiefly herbs, with sessile or sheathing parallel-nerved leaves, and perfect flowers. — Perianth corolla-like, 6- (rarely 4-) leaved or lobed, free from the 2 – 3-celled ovary. Stamens 6 (rarely 4), hypogynous or perigynous: anthers introrse (except in No. 10). Styles united. Stigmas 3, distinct or united. Fruit a capsule or berry, few – many-seeded. Seeds anatropous or amphitropous. Embryo small, in fleshy or hard albumen.

Synopsis.

TRIBE I. **ASPARAGEÆ.** Fruit a berry. Divisions of the perianth more or less united (except No. 4). — Leaves broad.

1. POLYGONATUM. Flowers axillary. Perianth tubular. Stems leafy.
2. SMILACINA. Flowers in a terminal raceme. Perianth spreading. Stems leafy.
3. CONVALLARIA. Flowers racemed. Perianth 6-lobed. Scape naked.
4. CLINTONIA. Flowers umbelled. Perianth 6-leaved. Scape naked.

TRIBE II. **ASPHODELEÆ.** Fruit a capsule. Divisions of the perianth united at the base. — Stems scape-like. Leaves linear, rarely lanceolate.

* Root a coated bulb.

5. ALLIUM. Flowers umbelled, from a scarious spathe. Seeds smooth and black.
6. NOLINA. Flowers racemed, white. Stigmas 3. Seeds roughened, brown.
7. CAMASSIA. Flowers racemed. Style slender. Capsule few-seeded.

* * Root a tuberous rhizoma.

8. SCHŒNOLIRION. Flowers racemed, white Seeds smooth and black. Leaves equitant.

TRIBE III. **TULIPACEÆ.** Fruit a capsule. Divisions of the perianth distinct, deciduous. — Stems leafy.

* Bulbous-rooted herbs. Seeds pale.

9. ERYTHRONIUM. Seeds ovoid, with a membranaceous appendage at the apex. Stem 2-leaved.
10. LILIUM. Seed flat, winged, not appendaged. Stem many-leaved.

* * Palm-like arborescent plants. Seeds black.

11. YUCCA. Stigmas 3, nearly sessile. Capsule dry or pulpy. Leaves spiny-pointed.

1. POLYGONATUM, Desf. SOLOMON'S SEAL.

Perianth tubular, 6-cleft. Stamens 6, inserted on the middle of the tube, included: anthers sagittate, fixed at the base. Ovary 3-celled, with 3 – 6 ovules in each cell. Style slender: stigma obtuse. Berry few-seeded. — Rhizoma creeping. Stem simple, leafy. Leaves oval or oblong. Peduncles axillary, 1 – few-flowered. Flowers drooping, on bractless pedicels, greenish.

1. **P. giganteum,** Dietrich. Smooth; stem tall (3° – 8° high), curving; leaves ovate, partly clasping, many-nerved; peduncles 3 – 5-flowered, the lower

ones half as long as the leaves; filaments smooth. — Rocky cliffs of the mountains of Georgia, and northward. — Flowers ¾′ long.

2. **P. biflorum,** Ell. Stem smooth, curving above; leaves 2-ranked, sessile or slightly clasping, oblong, 3 – 7-nerved, smooth, or pubescent beneath; peduncles much shorter than the leaves, 1 – 4-flowered; filaments granular-roughened; berry dark blue. — Shady banks. May. — Stem 1° – 2° high, naked below. Leaves 3′ – 4′ long. Flowers 4″ – 5″ long.

2. SMILACINA, Desf. Solomon's Seal.

Perianth 4- or 6-parted, spreading, deciduous. Stamens 4 or 6, inserted on the base of the perianth: anthers ovate. Ovary 2 – 3-celled, with two ovules in each cell. Style short and thick: stigma obscurely 3-lobed. Berry globular, 1 – 2-seeded. — Stems simple, erect, leafy. Flowers small, white, in a terminal raceme or panicle.

§ 1. Smilacina. — *Divisions of the perianth and stamens* 6. *Ovary* 3-*celled.*

1. **S. racemosa,** Desf. Pubescent; rhizoma thick; stem flexuous, curving and leafy above; leaves numerous, 2-ranked, oblong, acuminate, nearly sessile, strongly ribbed; flowers numerous, in a close raceme or panicle; berry red, spotted. — Rich soil in the upper districts. June – July. — Stem 1° – 2° high. Leaves 3′ – 5′ long.

§ 2. Maianthemum. — *Divisions of the perianth and stamens* 4. *Ovary* 2-*celled.*

2. **S. bifolia,** Ker. Smooth; rhizoma slender; stem low, erect, 2-leaved above; leaves ovate, cordate, sessile or clasping, finely nerved; raceme simple, few-flowered; berry red, spotted. — High mountains of North Carolina. June. — Stem 3′ – 6′ high. Leaves 1′ – 2′ long.

3. CONVALLARIA, L. Lily of the Valley.

Perianth bell-shaped, 6-cleft, deciduous. Stamens 6, inserted on the base of the perianth, included: anthers fixed at the base. Ovary 3-celled, tapering into the thick style. Ovules 4 – 6 in each cell. Stigma truncate. Berry globose, few-seeded. — A perennial stemless herb, with a creeping rhizoma, and white racemose flowers.

1. **C. majalis,** L. — High mountains of North Carolina. May. — Smooth. Rhizoma slender. Leaves two, oblong, their long petioles convolute, one within the other. Scape semi-terete, bearing a 1-sided raceme of fragrant nodding flowers. Berry red.

4. CLINTONIA, Raf.

Perianth bell-shaped, 6-leaved, deciduous. Stamens 6, inserted on the base of the perianth. Filaments filiform; anthers linear-oblong. Ovary 2 – 3-celled, with two or more ovules in each cell. Style elongated: stigma obtuse. Berry 2 – many-seeded. — Stemless herbs, with creeping rootstocks, large radical sheathing leaves, and an umbel of white or greenish flowers terminating the naked scape. Berries blue.

1. **C. umbellata,** Torr. Leaves 2 – 4, oblong, ciliate on the keel and margins; scape pubescent; umbel many-flowered; flowers small (3″ – 4″ long), white spotted with green or purple; ovules 2 in each cell. — Shady woods on the mountains, Georgia, and northward. June. — Scape 8′ – 12′ high, rather longer than the leaves.

2. **C. borealis,** Raf. Leaves obovate-oblong, ciliate on the margins acute; scape and 2 – 7-flowered umbel pubescent; flowers (6″ – 9″ long) greenish yellow; ovules numerous — Cold swamps on the high mountains of North Carolina. June. — Scape and leaves 8′ – 10′ high.

5. ALLIUM, L. Onion.

Perianth 6-parted, spreading, persistent. Stamens 6, inserted on the base of the perianth. Filaments subulate, the interior ones more or less dilated at the base. Ovary 3-celled. Style filiform: stigma entire. Capsule loculicidally 3-valved. Seeds anatropous or campylotropous, single or few in each cell, angled, black. — Strong-scented stemless herbs, with bulbous roots, and a naked scape, ending in an umbel of small flowers, from a 1 – 3-leaved spathe. — Flowers sometimes changed into bulblets.

* *Ovules solitary in the cells.*

1. **A. tricoccum,** Ait. Leaves lanceolate-oblong, acute, flat, long-tapering toward the base, early withering; umbel small, dense, many-flowered, erect; leaves of the perianth oblong, obtuse, longer than the stamens. — Mountains of North Carolina. July. — Bulbs clustered. Scape 1° high. Flowers white.

* * *Ovules 2 in each cell.*

2. **A. cernuum,** Roth. Leaves linear, channelled; scape angled; umbel many-flowered, nodding; leaves of the perianth acute; stamens exserted; ovary 6-toothed. — Mountains of South Carolina. July. — Scape 1° – 1½° high. Flowers rose-color, on slender pedicels.

3. **A. Canadense,** Kalm. Leaves narrowly linear, concave; scape terete; umbel erect, bearing a cluster of bulblets, intermingled with a few stalked rose-colored flowers; spathe 1 – 2-leaved; leaves of the perianth obtuse, as long as the stamens; ovary 6-toothed. — Banks of rivers. June. — Scape 1° high. Outer coats of the bulb white and scarious.

4. **A. mutabile,** Michx. Leaves very narrow, concave; scape terete; umbel erect, many-flowered; spathe 3-leaved; leaves of the perianth acute, as long as the stamens, white changing to rose-color. — Dry soil, Florida to North Carolina. May – June. — Scape 1° high. Outer coats of the bulb composed of a network of fine fibres.

5. **A. vineale,** L. Scape leafy at base (1° – 2° high); leaves terete, hollow; umbel often bulb-bearing; alternate filaments 3-cleft. — North Carolina (*Curtis*). Introduced.

* * * *Ovules several in each cell.*

6. **A. striatum,** Jacq. Leaves linear, concave; umbel erect, 3 – 10-flowered; spathe 2-leaved; perianth longer than the stamens, white, the exterior

leaves green on the keel. — Low pine barrens, Florida to North Carolina March – April. — Scape 6′ – 12′ high. Pedicels 1′ – 2′ long. Flowers 5″ long. Nearly inodorous.

6. NOLINA, Michx.

Perianth 6-parted, withering-persistent; the divisions oblong-lanceolate, 1-nerved. Stamens 6, inserted on the base of the perianth; filaments subulate. anthers cordate. Style very short, persistent: stigmas 3, recurved. Ovary 3-angled, 3-celled, with two anatropous collateral ascending ovules in each cell. Capsule obovate, wing-angled, 3-valved, mostly 1-seeded. Seed oblong-obovate, longitudinally grooved on the inner face. Embryo straight, shorter than the fleshy albumen. — Root tuberous. Leaves numerous, all radical, very long and narrow, recurved, keeled, rough on the margins. Scape branching above. Flowers polygamous, small, white, crowded in long bracted racemes. Pedicels jointed, reflexed in fruit.

1. **N. Georgiana,** Michx. — Dry pine barrens in the middle districts of Georgia and South Carolina. April – May. — Scape 2° – 3° high. Leaves 1° – 2° long, dry and harsh.

7. CAMASSIA, Lindl.

Perianth bell-shaped, 6-leaved, deciduous. Stamens 6, inserted on the base of the perianth. Style filiform. Capsule 3-angled, 3-celled, loculicidally 3-valved, several-seeded. — Scape from a coated bulb. Leaves radical. Flowers racemose, blue or purple.

1. **C. Fraseri,** Torr. (Wild Hyacinth.) Leaves linear; scape 1° high; raceme many-flowered; flowers showy, pale blue; cells of the ovary 6 – 9-ovuled. — Rich valleys of the mountains of Georgia, and northward. April.

8. SCHŒNOLIRION, Torr.

Perianth 6-parted, withering-persistent; the divisions 3 – 5-nerved. Stamens 6, inserted on the base of the perianth: filaments subulate. Style subulate, persistent. stigma minutely 3-lobed. Ovary globose, 3-celled, with two anatropous ascending ovules in each cell. Capsule coriaceous, obtusely 3-angled, loculicidally 3-valved, 1 – 6 seeded. Seeds globose or angular, smooth, black, and shining. Embryo straight, as long as the fleshy albumen. — Perennial herbs. Root a tuberous rhizoma. Scape simple, or branching above. Radical leaves smooth, equitant, linear, the others small and bract-like. Flowers small, white, in loose bracted racemes. Pedicels spreading, jointed.

1. **S. Elliottii,** Feay. Scape often sparingly branched (1° – 2° high); leaves concave, the upper ones small and distant; racemes loosely many-flowered, bracts thick, subulate, appressed; leaves of the perianth oblong-oval, 5-nerved, whitish; filaments subulate. (S. Michauxii, 1st edit.) — Wet pine barrens, Georgia and Florida. May – June.

2. **S. croceum,** Gray. Scape simple (12′ – 15′ high), leafless; leaves narrow-linear, flat, as long as the scape; raceme 3′ – 4′ long; bracts thin and scarious, oval, obtuse; leaves of the perianth saffron-yellow, lance-oblong, 3-nerved. (Phalangium croceum, *Michx.*) — Low ground, Southern Georgia to Tennessee. June.

9. ERYTHRONIUM, L. Dog's-Tooth Violet.

Perianth corolla-like, with six spreading or recurved deciduous leaves; the three inner ones grooved and 2-toothed at the base, rarely toothless. Stamens 6, slender: anthers oblong-linear, erect. Style slender. stigma 3-lobed. Capsule obovate, 3-angled, many-seeded. Seeds ovoid, with a loose membranaceous appendage at the apex. — Low herbs from a scaly bulb. Stems scape-like, bearing near the middle a pair of oblong spotted sheathing leaves, and at the apex a single nodding flower.

1. **E. Americanum,** Smith. Bulbs deep, the younger ones bearing only a single leaf; leaves lanceolate or oblong, tapering into the sheathing base, variegated with pale and deep green; flowers (1′ long) yellow, spotted near the base; style club-shaped, 3-angled; stigma obscurely 3-lobed. — Rich woods, chiefly in the upper districts. Feb. – March.

2. **E. albidum,** Nutt. Leaves not spotted; flowers bluish white; style slender, the three stigmas distinct, spreading. — Summit of Roan Mountain, North Carolina (*Canby*).

10. LILIUM, L. Lily

Perianth corolla-like, 6-leaved, deciduous, the leaves spreading or recurved above, sessile or clawed, with a nectariferous groove near the base. Stamens 6, elongated; anthers linear, extrorse in the bud, versatile. Style filiform, elongated; stigma 3-lobed. Capsule oblong, many-seeded. Seeds flat, membranaceous, horizontal, crowded in the cells. — Leafy herbs, from scaly bulbs. Leaves scattered or whorled, sessile. Flowers large, erect, or nodding.

* *Flowers erect: leaves of the perianth spreading, clawed.*

1. **L. Philadelphicum,** L. Leaves lanceolate, the upper whorled; flowers 1 – 3, reddish orange spotted with purple; leaves of the perianth lanceolate, abruptly pointed. — Mountains of North Carolina, and northward. July. — Stem 1° – 2° high. Flowers 2′ long.

2 **L. Catesbæi,** Walt. Leaves linear-lanceolate, all scattered and erect; flower solitary, terminal, scarlet, variegated with yellow and purple; leaves of the perianth lanceolate, acuminate, with the margins of the claws involute; the three inner ones broader and ribbed on the back; capsule oblong, nearly terete — Low pine barrens, Florida to North Carolina. August – Sept. — Stem 1° – 2° high. Leaves 1′ – 2′ long. Flowers 3′ – 4′ long.

* * *Flowers nodding; leaves of the perianth recurved, sessile.*

3. **L. Canadense,** L. Stem commonly few-flowered; leaves in remote whorls, lanceolate, 3-nerved, hairy on the nerves beneath; flowers long-peduncled; leaves of the perianth yellow spotted with purple. — Mountain meadows, Georgia, and northward. June – July. — Stem 2° – 3° high. Leaves and flowers 2′ – 3′ long.

4. **L. superbum,** L. Stem commonly many-flowered; leaves smooth, lanceolate, 3-nerved, the lower ones whorled, the upper scattered; leaves of the perianth revolute, rather obtuse, orange spotted with purple. — Rich soil in the middle and upper districts, Georgia, and northward. June – July. — Stem 3° – 6° high. Flowers, when numerous, disposed in a pyramidal raceme.

Var. **Carolinianum.** (L. Carolinianum, *Michx.*) Leaves often all scattered, broader, more tapering at the base, faintly nerved; flowers 1 – 3; leaves of the perianth acute. — Swamps in the lower districts. July. — Stem 2° – 3° high.

5. **L. Grayi,** Watson. Leaves lanceolate (2′ or less long), in whorls of 4 – 8, not acuminate; flowers often solitary, horizontal (1½′ – 2½′ long), the segments oblanceolate, spreading but not recurved, deep reddish orange, purple-spotted. — Summit of Roan Mountain, North Carolina.

11. YUCCA, L. SPANISH BAYONET.

Perianth cup-shaped, corolla-like, 6-leaved. Sepals and petals nearly alike, late deciduous. Stamens 6, with thick granular club-shaped filaments: anthers small, oval. Ovary 3-celled, 3-sided, grooved at the angles. Stigmas 3, nearly sessile, oblong, concave, 2-cleft. Ovules numerous, in two rows, the rows separated by a false partition. Capsule oblong, 6-celled, pulpy and indehiscent, or dry and loculicidally 3-valved at the apex Seeds numerous, flat, horizontal, smooth and black. — Plants with a thick palm-like leafy stem (caudex), numerous rigid and spine-pointed leaves, and white showy panicled flowers.

* *Stem short: capsule dry,* 3-*valved.*

1. **Y. filamentosa,** L. (BEAR-GRASS.) Stem short and leafy; leaves from linear to broad-lanceolate, green or glaucous, with thread-like filaments on the margins; scape branching and pubescent above; capsule with 3 rounded angles, at length separating at the inflexed sutures into three 2-celled carpels. — Light or sandy soil. June. — Stem rarely more than a foot above the ground. Leaves 1° – 2° long. Scape 4° – 6° high.

* * *Stem tall: capsule coriaceous or pulpy,* 6-*angled, indehiscent.*

2. **Y. gloriosa,** L. Stem mostly simple, leafy at the summit; leaves linear-lanceolate, rigid, smooth on the margins; panicle large, smooth, pyramidal, short-peduncled; flowers single or clustered, leaves of the perianth white, lanceolate, acute; capsule coriaceous. — Dry sandy coast, Florida to North Carolina. May – June. — Stem 2° – 4° high. Leaves 1° – 1½° long. Panicle 2° – 3° long.

3. **Y. aloifolia,** L. Stem mostly branching, leafy above; leaves linear-lanceolate, very rigid, strongly spine-pointed, very rough on the margins, the lower ones reflexed; panicle short, smooth, densely flowered, nearly sessile; divisions of the perianth ovate-lanceolate, white tinged with purple; capsule pulpy. — With the preceding. May – June. — Stem 4° – 8° high. Leaves and panicle 1° – 1½° long.

The GRAPE HYACINTH (MUSCARI), STAR OF BETHLEHEM (ORNITHOGALUM), ASPARAGUS, and DAY LILY (HEMEROCALLIS), which have escaped from cultivation, are occasionally found spontaneous near homesteads, and along roadsides.

ORDER 154. MELANTHACEÆ. (COLCHICUM FAMILY.)

Perennial herbs, with parallel-nerved leaves, and regular flowers. Perianth of 6 nearly equal divisions, free from or coherent with the base of the 3-celled ovary. Stamens 6 (in Pleea 9–12), inserted on the base of the perianth: anthers extrorse (except in Tofieldia and Pleea). Styles 3, distinct, or more or less united. Fruit a capsule or berry. Seeds anatropous. Embryo minute, in copious albumen.

Synopsis.

SUBORDER I. UVULARIEÆ. (THE BELLWORT FAMILY.) Perianth corolla-like, bell-shaped, the divisions distinct and deciduous. Styles partly or wholly united. Fruit a few-seeded capsule or berry. — Stems forking and leafy above, sheathed below. Leaves ovate or lanceolate, sessile or clasping. Flowers perfect, solitary, nodding.

1. **UVULARIA.** Fruit a 3-lobed loculicidal capsule. Flowers on short lateral branches.
2. **PROSARTES.** Fruit a 3-6-seeded berry. Flowers terminal, on straight peduncles.
3. **STREPTOPUS.** Fruit a many-seeded berry. Flowers axillary, on bent peduncles.

SUBORDER II. MELANTHIEÆ. (THE COLCHICUM FAMILY.) Perianth spreading; the divisions mostly distinct, often clawed, withering-persistent. Styles separate. Fruit a 3-celled capsule. — Stems leafy at the base, simple or branched. Flowers in racemes or panicles, sometimes polygamous or diœcious.

* Anther cells confluent.

+ Leaves of the perianth biglandular near the base.

4. **MELANTHIUM.** Flowers polygamous. Filaments partly adhering to the claws of the perianth.
5. **ZYGADENUS.** Flowers perfect. Filaments free from the perianth.

+ + Leaves of the perianth glandless.

6. **STENANTHIUM.** Leaves of the perianth lanceolate, acute, coherent with the base of the ovary, longer than the stamens.
7. **VERATRUM.** Leaves of the perianth oblong or obovate, free from the ovary, longer than the stamens and short styles. Flowers polygamous.
8. **AMIANTHIUM.** Leaves of the perianth obovate, free, shorter than the stamens and slender styles. Flowers perfect, racemed.
9. **SCHŒNOCAULON.** Leaves of the perianth oblong, shorter than the stamens, much longer than the very short styles. Flowers perfect, spiked.

* * Anther cells distinct.

+ Capsule loculicidal.

10. **XEROPHYLLUM.** Flowers perfect. Capsule 6-seeded. Radical leaves grass-like.
11. **CHAMÆLIRIUM.** Flowers diœcious. Capsule many-seeded. Radical leaves obovate.

+ + Capsule septicidal. Leaves equitant. Anthers introrse.

12. **PLEEA.** Stamens 9–12. Anthers versatile. Bracts spathe-like.
13. **TOFIELDIA.** Stamens 6. Anthers erect. Bracts short.

1. UVULARIA, L. BELLWORT.

Perianth bell-shaped, corolla-like, the divisions distinct, grooved at the base within, deciduous. Filaments short: anthers linear, adnate. Style deeply 3-cleft: stigmas spreading. Capsule 3-lobed or 3-angled, loculicidally 3-valved at the apex. Seeds few, obovoid, half encircled by the tumid raphe. — Low herbs, from a slender creeping rhizoma. Leaves sessile or perfoliate. Flowers nodding, solitary, lateral or at the apex of a 1-leaved branch, yellow.

* *Leaves rounded at the base, perfoliate.*

1. **U. perfoliata,** L. Leaves ovate or oblong, glaucous beneath, the sides revolute when young; leaves of the perianth lanceolate, acute, granular-roughened within, pale yellow; capsule obovate, truncate. — Woods and thickets. April. — Stem 8′–12′ high. Leaves 1½′–2½′ long. Flowers 1′ long.

2. **U. grandiflora,** Smith. Leaves oblong, pale or closely pubescent beneath, the young ones revolute on the margins; leaves of the perianth linear-lanceolate, acute, smooth within, greenish yellow; anthers obtuse; capsule obovate. — Woods and thickets in the upper districts of Georgia, and northward. April. — Larger than the preceding. Leaves 2′–5′ long. Flowers 1½′ long.

* * *Leaves narrowed at the base, sessile.*

3. **U. sessilifolia,** L. Smooth; leaves lanceolate-oblong, glaucous beneath; flowers on short naked peduncle-like branches, opposite the leaves; leaves of the perianth lanceolate, obtuse, barely longer than the 3-cleft style; anthers obtuse; capsule obovate, stalked. — Rich soil in the middle and upper districts. April. — Stem 6′–12′ high. Leaves 1′–1½′ long. Flowers 8″ long.

4. **U. Floridana,** Chapm. Smooth; leaves oblong, slightly clasping, glaucous beneath; flowers on a slender 1-leaved branch; leaves of the perianth linear-lanceolate, acuminate, twice as long as the 3-cleft style; anthers pointed. — Low shady woods, Middle Florida. March. — Stem 4′–6′ high. Leaves thin, 1′ long. Flowers 8″ long, pale yellow.

5. **U. puberula,** Michx. Slightly pubescent; leaves green on both sides, oval, rounded at the base and somewhat clasping, rough on the margins; style 3-parted nearly to the base, as long as the short-pointed anthers; capsule ovate, sessile. — Mountains of North Carolina. — Flowers yellowish white

2. PROSARTES, Don.

Perianth bell-shaped, corolla-like, the divisions distinct, deciduous. Filaments filiform, much longer than the linear-oblong obtuse anthers. Styles united: stigmas spreading. Berry ovoid, acute, 3–6-seeded. — A low forking herb. Peduncles terminal, not bent nor twisted.

1. **P. lanuginosa,** Don. Leaves 2′–3′ long, sessile, ovate-oblong, acuminate, oblique or slightly cordate at the base, 5-nerved, pubescent. Peduncles 1–2, terminal, slender, pubescent. Leaves of the perianth ½′ long, lanceolate, acuminate, 3-nerved, greenish. Style smooth. Berry red. — Mountains of Georgia and North Carolina. June.

2. **P. maculata,** Buckley. Stem and leaves of the preceding; flowers rather larger; leaves of the perianth yellowish, dotted with fine black spots, a third longer than the stamens. — Mountains of North Carolina.

3. STREPTOPUS, Michx.

Perianth bell-shaped, corolla-like, with the divisions distinct, deciduous, the inner ones keeled. Anthers sagittate, fixed near the base, entire, or 2-pointed at the apex, longer than the filaments. Styles united: stigma 3-cleft or entire. Berry nearly globose, many-seeded. — Erect herbs with spreading branches. Leaves clasping. Peduncles opposite the leaves, bent or twisted in the middle.

1. **S. roseus,** Michx. Stem much branched; leaves ovate, or the uppermost lanceolate, acuminate, slightly clasping, ciliate on the margins, 5-7-nerved; flowers mostly solitary, rose-color, nodding; anthers 2-pointed at the apex; stigma 3-cleft. — Shady woods on the mountains of Georgia, and northward. May. — Stem 2° high. Leaves 2′-4′ long. Flowers 3″-4″ long.

2. **S. amplexifolius,** DC. Margins of the leaves smooth, flowers greenish white; anthers entire; style filiform; stigma entire; otherwise like the last. — Shady woods on the mountains of North Carolina.

4. MELANTHIUM, L.

Flowers monœciously polygamous. Divisions of the perianth spreading, long-clawed, somewhat cordate or hastate and biglandular at the base; the filaments partly adhering to their claws: anthers reniform, becoming peltate, the cells confluent. Styles 3, subulate. Capsule membranaceous, 3-lobed, the cells separating and opening down the inner suture, several-seeded. Seeds flat, winged. — Stems tumid at the base, rough-pubescent above. Leaves long, linear. Flowers panicled, cream-color, turning brownish.

1. **M. Virginicum,** L. Stem tall, simple, the upper portion, like the loose panicle, pubescent and somewhat hoary; lowest leaves long, broadly linear and clasping, the upper small and sessile; flowers shorter than the pedicels, the upper ones perfect; leaves of the perianth oblong or roundish, often acute, the slender claw adnate to the lower half of the filaments; glands conspicuous. — Swamps. July-August. — Stem 3°-4° high. Lowest leaves 1°-1½° long.

2. **M. latifolium,** Desrouss. Very near the preceding, but leaves wider, flowers smaller, the divisions 2″-3″ long, orbicular, undulate; the claw bearing the stamens below the middle; glands connivent or obscure. (M. hybridum, *Walt.*) — Open woods in the upper districts. August.

5. ZYGADENUS, Michx.

Flowers perfect. Leaves of the perianth ovate or oblong, spreading, sessile or nearly so, 1-2-glandular at the base. Filaments free from the perianth, and of equal length: anthers broadly cordate, becoming peltate. Styles 3, slender, spreading. Capsule membranaceous, 3-angled, septicidal at the apex, many-seeded. Seeds oblong, wingless, or slightly margined. — Stems smooth and simple. Leaves linear. Flowers white, in crowded panicles.

1. **Z. glaberrimus,** Michx. Stem rigid, leafy; lowest leaves broadly linear, glaucous beneath, the upper small and scattered; panicle small, rigid; bracts ovate; leaves of the perianth oblong, short-clawed, often with a white callus on one or both sides at the base; glands prominent; stamens and styles subulate; seeds oblong. — Pine barren swamps, Florida to North Carolina. June-July. — Stem 2°-3° high. Lowest leaves 1°-1½° long. Panicle 6′-12′ long, commonly dense. Flowers 1′ in diameter, as long as the pedicels.

2. **Z. leimanthoides,** Gray. Stem slender, somewhat naked above; leaves narrowly linear, green on both sides; panicle slender; bracts lanceolate; leaves of the perianth oval or obovate, sessile, the glands obscure or wanting; stamens and styles filiform; seeds narrowly margined, winged at the apex. — Low banks in the upper districts. July – August. — Stem 2° – 4° high. Lowest leaves 1° – 2° long. Panicle 8′ – 12′ long. Flowers 4″ in diameter, much shorter than the slender pedicels.

6. STENANTHIUM, Gray.

Flowers perfect or polygamous. Leaves of the perianth lanceolate, acuminate, united at the base, and adnate to the base of the ovary, longer than the stamens. Glands none. Anthers roundish, becoming peltate. Styles short, subulate. stigmas minute. Capsule ovate, membranaceous, septicidal at the apex, several-seeded. Seeds nearly wingless. — Stem smooth, slender, tumid at the base. Lowest leaves elongated, channelled. Flowers small, greenish white, in a simple panicle

1. **S. angustifolium,** Gray. Stem 2° – 3° high; lowest leaves 1° – 2° long; panicle 1° – 2° long, composed of simple spiked racemes; the lower flowers often sterile; perianth about 4″ in diameter, nearly sessile, twice as long as the stamens. — Shady woods in the upper districts. June – July.

2. **S. robustum,** Watson. Stem stout, leafy, 3° – 5° high; leaves 4″ – 10″ broad; panicle large, often compound; segments of the perianth 3″ – 4″ long; capsule erect, with a recurved beak, 4″ long. — South Carolina and Tennessee (*Watson*).

7. VERATRUM, Tourn. False Hellebore.

Flowers polygamous. Leaves of the perianth spreading, distinct, oblong or obovate, narrowed at the base, free from the ovary, glandless, longer than the stamens. Styles short, subulate. Capsule oblong, membranaceous, 3-pointed, the cells opening above at the inner suture. Seeds few, flat, broadly winged. — Stems leafy, tumid at the base, pubescent. Leaves oval or oblong, plaited. Flowers in ample panicles, green or purplish brown.

1. **V. viride,** L. Stem stout, leafy throughout; leaves broadly oval, acute, clasping, pubescent beneath; panicle pyramidal, composed of numerous dense racemes; divisions of the perianth oblong, smooth, yellowish green. — Mountain meadows, Georgia, and northward. April – May. — Stem 3° – 7° high. Lower leaves 1° long. Flowers large.

2. **V. intermedium,** Chapm. Stem slender, leafy; lowest leaves lanceolate or oblong, acute, narrowed into a long sheathing petiole, the upper small, lanceolate, scattered, pubescent beneath; panicle large, composed of long and slender loosely-flowered racemes; leaves of the perianth spatulate-oblong, dark brown within, hoary puberulent without; ovary woolly; capsule 3-winged; seeds linear-oblong, broadly winged. — Rich shady hummocks, Middle Florida. July. — Stem 3° – 5° high. Lower leaves 1° long. Flowers 6″ – 8″ wide.

3. **V. parviflorum,** Michx. Stem slender, naked above; leaves varying from lanceolate to oval, smooth, narrowed into sheathing petioles; panicle

slender, long and spreading, loosely flowered; leaves of the perianth greenish, spatulate, smooth, twice as long as the stamens; ovary smooth. — Mountains of North Carolina. July. — Stem 2° - 5° high. Lowest leaves 9′ - 12′ long. Flowers 4″ - 5″ wide.

8. AMIANTHIUM, Gray. Fly Poison.

Flowers perfect. Leaves of the perianth oblong or obovate, sessile, spreading, glandless, shorter than the slender stamens. Anthers kidney-shaped, becoming peltate. Styles slender: stigmas minute. Capsule membranaceous, 3-lobed, the cells separating and opening down the inner suture, few-seeded. Seeds oblong or linear, wingless. — Stems simple, smooth, tumid or bulbous at the base, scape-like above. Lowest leaves long and crowded. Flowers white, in a simple raceme.

1. **A. muscætoxicum,** Gray. Stem bulbous at the base, somewhat angled; lowest leaves strap-shaped, obtuse, channelled, the uppermost small and bract-like; raceme cylindrical, densely flowered; leaves of the perianth oblong, nearly equalling the stamens; styles spreading; seeds ovoid, red. — — Rich woods. May - June. — Stem 1° - 2° high. Flowers small, turning greenish.

2. **A. angustifolium,** Gray. Stem tumid at the base, slender, terete; leaves linear, acute, channelled, somewhat glaucous, the lowest very long, the uppermost small and bract-like; raceme oblong, mostly densely flowered; leaves of the perianth oval, shorter than the stamens; styles erect; seeds linear. — Low pine barrens. May - June. — Stem 2° high. Flowers turning purple.

3. **A. ? aspericaule,** Gray. Stem and flowers pulverulent-roughened; stem leaves linear-lanceolate, flat; flowers in a small (2′ long) spike-like panicle, composed of spiked racemes. — Near Columbia, South Carolina (*Curtis*). — Imperfectly known.

9. SCHŒNOCAULON, Gray.

Flowers perfect. Leaves of the perianth somewhat spreading, linear-oblong, glandless; filaments subulate, at length twice as long as the perianth: anthers kidney-shaped, becoming peltate. Ovary 6 - 8-ovuled. Styles very short: stigmas minute. Capsule oblong, obtusely 3-angled, 3-valved, the cells 1-seeded. Seeds linear, nearly terete. — Scape very slender, bulbous at the base. Leaves all radical, very long and narrow, dry, channelled. Flowers small, pale green, crowded in a slender spike.

1. **S. gracile,** Gray. — Dry sands, Georgia and Florida. April - May. Leaves 1° 2° long, scarcely 1″ wide. Scape 2° - 3° high, rush-like. Spike 3′ - 10′ long.

10. XEROPHYLLUM, Michx.

Flowers perfect. Leaves of the perianth widely spreading, sessile, oval, as long as the subulate filaments. Anthers round-ovate, 2-celled. Styles filiform: stigmas decurrent within. Capsule roundish, 3-lobed, loculicidally 3-valved. Seeds 2 in each cell, collateral, oblong, wingless. — Stem bulbous at the base, simple, leafy. Leaves dry, rigid, rough on the margins, very narrow, dilated at the base; those of the stem very numerous and needle-shaped. Flowers white, in a simple dense raceme.

1. **X. asphodeloides,** Gray. — Dry sandy soil, North Carolina, and northward. May – June. — Stem 3° – 5° high. Radical leaves spreading, 1° or more long, very slender-pointed. Flowers 2″ long. Stamens dilated below.

11. CHAMÆLIRIUM, Willd. BLAZING STAR.

Flowers diœcious. Leaves of the perianth linear-spatulate, shorter than the filiform filaments. Anthers 2-celled, roundish. Styles club-shaped: stigmas decurrent. Capsule ovoid, 3-angled, loculicidally 3-valved, many-seeded. Seeds linear-oblong, winged at the ends. — Stem simple, from a thick rhizoma, leafy. Lowest leaves spatulate or obovate, the others linear or lanceolate. Flowers small, white, in a simple spiked raceme.

1. **C. Carolinianum,** Willd. — Low grounds. May – June. — Stem 1° – 2° high, furrowed. Radical leaves clustered, 2′ – 4′ long, spreading; the uppermost small and bract-like. Racemes 6′ – 12′ long, the sterile slender and drooping at the summit; the fertile rigid and erect. Perianth inconspicuous.

12. PLEEA, Michx.

Flowers perfect. Leaves of the perianth sessile, widely spreading, lanceolate, rigid. Stamens 9 – 12, shorter than the perianth: filaments slender: anthers linear, introrse, 2-cleft at the base, versatile. Styles short, subulate: stigmas simple. Capsule coriaceous, ovate, 3-lobed, many-seeded: the cells opening down the inner suture. Seeds oblong, bristle-pointed. — Stems smooth and slender, from clustered rootstocks. Leaves chiefly radical, very narrow, 2-edged, equitant. Flowers few in a simple raceme, white. Bracts spathe-like, clasping.

1. **P. tenuifolia,** Michx. — Pine barren swamps and bogs, Florida to North Carolina. Oct. — Stem rush-like, 2° high. Radical leaves erect, rigid, perennial, 6′ – 9′ long. Raceme rigid, 6 – 9-flowered, the erect pedicels enclosed in the rigid clasping bracts. Flowers 1′ wide, greenish without.

13. TOFIELDIA, Hudson.

Flowers perfect. Leaves of the perianth spreading, sessile, oblong or obovate. Filaments subulate: anthers innate or introrse, 2-celled. Styles subulate: stigmas terminal. Capsule 3-angled, septicidally 3-partible, many-seeded. Seeds oblong. — Stems simple, scape-like, from creeping rootstocks. Leaves linear, 2-edged, equitant. Flowers small, whitish, in spikes or racemes. Pedicels commonly minutely 3-bracted under the flower.

§ 1. TOFIELDIA proper. — *Racemes simple, the flowers successively opening from the base upward (centripetal): anthers introrse: seeds without appendages. — Smooth herbs.*

1. **T. glabra,** Nutt. Stem leafy at the base, and sparingly above; leaves linear; racemes densely flowered; stamens slightly exserted; styles very

short. — Low pine barrens, in the middle and lower districts of North and South Carolina. Oct. — Stem 1° – 2° high. Raceme 2′ – 4′ long. Flowers white.

§ 2. TRIANTHA. — *Racemes compound, the flowers successively opening from the apex downward (centrifugal): anthers innate: seeds with tail-like appendages at each end. — Pubescent herbs.*

2. **T. pubens,** Ait. Stem and pedicels rough-puberulent; leaves long, linear; racemes (3′ – 6′ long) loosely flowered; pedicels mostly three in a cluster, longer than the greenish white flowers; capsule as long as the perianth. — Low pine barrens. Sept. — Stem 1° – 1½° high. Leaves 6′ – 12′ long.

3. **T. glutinosa,** Willd. Stem and pedicels clammy-pubescent; leaves short, linear-sword-shaped; racemes (1′ long) dense-flowered; pedicels 3 – 5 in a cluster, shorter than the yellowish flowers; capsule longer than the perianth. — Mountains of North Carolina, and northward. June. — Stem 1° – 1½° high. Leaves 4′ – 6′ long.

ORDER 155. JUNCACEÆ. (RUSH FAMILY.)

Tough grass-like herbs, with naked or leafy and jointed stems, flat or terete leaves, and regular cymose-clustered or panicled flowers. — Perianth of six nearly equal calyx-like persistent divisions. Stamens 3 or 6, inserted on the base of the sepals: anthers 2-celled, introrse, fixed at the base. Ovary free from the perianth, 1 – 3-celled, 3 – many-ovuled. Style single: stigmas commonly 3, hairy. Capsule loculicidally 3-valved. Seeds anatropous. Embryo minute, at the base of the albumen.

Synopsis.

1. **LUZULA. Capsule 1-celled, 3-seeded. Leaves mostly hairy.**
2. **JUNCUS. Capsule many-seeded; the placentæ separating with the partitions. Smooth herbs, with alternate leaves.**

1. LUZULA, DC. WOOD RUSH.

Sepals flat. Stamens 6. Style very short: stigmas filiform, villous. Capsule 1-celled, 3-valved, 3-seeded. Seeds erect from the base of the cell. — Perennial herbs, with flat mostly hairy leaves, and umbellate or spiked flowers.

1. **L. campestris,** DC. Stem leafy; leaves linear, hairy; flowers in dense ovoid umbellate spikes; capsule roundish; seeds with a conical appendage at the base. — Dry woods and banks, Florida, and northward. March – April. — Stems clustered, 1° high.

2. **L. pilosa,** Willd. Stem leafy; leaves linear or lanceolate-linear, hairy; flowers single, umbellate; capsule ovate, obtuse; seeds with a curved appendage at the apex. — Mountains of North Carolina, and northward. May. — Plant 6′ – 9′ high.

3. **L. Carolinæ,** Watson? Villous; lowest leaves broadly linear, as long as the stem; stem leaves 3, short (1′ long), distant; umbel nearly simple, the setaceous branches spreading or drooping, 1-flowered; sepals ovate-lanceolate, very acute, as long as the ovate-acute capsule; seed not appendaged. — Shaded rocks on the mountains of Georgia. April.

2. JUNCUS, L. Rush.

Outer sepals keeled. Stamens 3 or 6. Style very short: stigmas villous. Capsule 3-celled, or imperfectly 3-celled; the partitions adherent to the valves, and bearing the placentæ at their inner edges. Seeds numerous, often appendaged, horizontal. — Chiefly perennial. Leaves alternate, often knotted by cross partitions. Flowers mostly green, clustered, cymose, or panicled.

§ 1. *Stems scape-like, jointless, sheathed or leafy at the base: stamens* 6.

* *Panicles lateral: stem sheathed at the base.*

1. **J. effusus,** L. Stem soft and spongy; sheaths dark brown; panicle diffuse or contracted; flowers single; sepals lanceolate, as long as the obovate obtuse obscurely 3-angled light brown capsule. — Bogs and swamps; common. May – Sept. — Stems tufted, 2° – 4° high.

* * *Panicles lateral: stem leafy at the base: leaves terete.*

2. **J. setaceus,** Rostk. Stem and leaves slender; sheaths light brown; panicle simple, few-flowered; flowers single; sepals rigid, lanceolate-ovate, rather longer than the globose-pointed green capsule. — Low grounds and swamps. May – July. — Stems growing in small tufts, 1° – 3° high. Capsule coriaceous.

3. **J. Rœmerianus,** Scheele. Stem and leaves stout and rigid, hard-pointed; panicle compound; flowers small, 4 – 8 in a cluster, diœcious; sepals lanceolate, as long as the small obovate obtuse dark brown capsule. — Brackish marshes along the coast. April – May. — Stem 4° – 5° high.

* * * *Panicles terminal, forking: leaves channelled or grooved; the upper ones forming an involucre under the panicle: flowers single.*

4. **J. tenuis,** Willd. Stems tough, not tumid at the base, several-leaved; leaves narrowly linear, channelled; involucre longer than the panicle; sepals lanceolate, very acute, one third longer than the ovoid capsule. — Low grounds. May – June. — Stem 6′ – 12′ high. Panicle small, the flowers mostly on one side of the branches. Capsule light green.

5. **J. dichotomus,** Ell. Stem tumid at the base, 1 – 3-leaved; leaves filiform, nearly terete, slightly grooved on the inner side; involucre mostly shorter than the cymose panicle; sepals rigid, ovate-lanceolate, very acute, as long as the globose dark green capsule. — Low grounds, Florida to North Carolina. May – June. — Stem 1° – 3° high. Panicle dense or elongated.

6. **J. Gerardi,** Loisel. Stem terete (1° – 2° high); leaves linear; panicle contracted; sepals oval-oblong, obtuse, the margins brown, rather longer than the oval light brown capsule. — Salt marshes, Florida, and northward.

§ 2. *Stems jointed, leafy: clusters or panicles terminal.*

* *Leaves terete or somewhat flattened, knotted: stamens* 3.

7 **J. scirpoides,** Lam. Rigid; stem stout, erect; leaves terete, panicle erect, contracted, the few large globose green or brownish heads composed of several more or less distinct smaller ones; sepals lanceolate-subulate, as long as the lanceolate taper-pointed 3-angled capsule; seed ovoid, reticulated, without appendages. (J. echinatus, *Ell.*) — Varies with the smaller more numerous and crowded heads conspicuously lobed by the more distinct clusters, and with broader and shorter sepals and capsules. — Sandy swamps, Florida to North Carolina. July - Sept. — Stem 2° high, from a thick creeeping rhizoma. Heads 4″ - 7″ in diameter.

8. **J. polycephalus,** Ell., Michx. in part. Stem tall, virgate, compressed near the base; leaves long, flattened, and often somewhat sword-shaped; panicle large, widely spreading, the numerous globose many-flowered pale heads sessile, or on long diverging peduncles; sepals linear-subulate, shorter than the lanceolate-subulate 3-angled capsule; seeds oblong, striate, barely pointed. — Ponds and miry margins of streams, Florida to North Carolina. July - Sept. — Stem 2° - 4° long. Leaves weak, 1° - 2° long, sometimes ½′ wide.

9. **J. brachycarpus,** Engelm. Stem erect (1° - 2° high), mostly 2-leaved, heads 2 - 10, globular, closely many-flowered, pale green; sepals linear-subulate, unequal, the outer ones longer; capsule ovoid, acute, 1-celled, shorter than the sepals; style very short. — Florida to South Carolina, and westward.

10. **J. diffusissimus,** Buckley. Stem leafy (6′ - 3° long), weak; leaves compressed, knotted; panicle decompound, widely spreading, the clusters 5 - 7-flowered; sepals equal, lanceolate, acute; capsule (4″ long) oblong-linear, barely acute, twice as long as the sepals; seeds ovoid obtuse. — New Orleans, Tennessee, and westward.

11. **J. Elliottii,** Chapm. Stem slender, nearly terete; leaves terete, grooved near the base within; panicle erect, simple or compound; heads (1″ - 2″ long) 5 - 8-flowered; sepals ovate-lanceolate, as long as the ovoid obscurely angled obtuse dark brown capsule; seeds reddish brown, oblong, striate, without appendages. (J. acuminatus, *Ell.*, not of *Michx.*) — Bogs and ditches, Florida to North Carolina. June - August. Root fibrous, often bearing small tubers. Stem 1° - 2° high. Heads commonly very numerous. Capsule 1″ long, shining.

12. **J. acuminatus,** Michx. Stems clustered, 3′ - 2° high; leaves filiform, terete; panicle simple or compound; clusters few - many-flowered; sepals subulate-lanceolate; capsule triangular, acute, equalling or longer than the sepals; seeds not appendaged. — Low or marshy ground; common.

Var. **debilis,** Engelm. Stems weak, erect or declining, 1° or less long; panicles mostly simple; heads 2 - 5 flowered; sepals shorter than the capsule. — Wet places, chiefly in the upper districts.

13. **J. Canadensis,** Gay. Stems clustered; leaves terete; heads few or numerous, in an open or dense panicle; sepals linear-lanceolate, acute, the ex-

terior shorter; capsule triangular, longer than the sepals; seeds appendaged. — Wet ground; common. August – Sept.

Var. **subcaudatus,** Engelm. Stem slender, 1° - 2° high; panicle spreading; heads 8 – 20-flowered; sepals very acute; seeds short-appendaged. — Swamps, Georgia and South Carolina.

Var. **longecaudatus,** Engelm. Stem stout, 2° - 3° high; panicle erect, compound, the many-flowered heads separate or clustered; seeds long-appendaged at both ends. — Swamps and shallow ponds, Georgia to North Carolina.

* * *Leaves terete, knotted: stamens* 6 (*variable in No.* 14): *flowers clustered.*

14. **J. caudatus,** Chapm. Rigid throughout; stem stout, from a thick and creeping rhizoma; leaves commonly 3, short and pungent; panicle erect, compound, mostly contracted; clusters numerous, more or less crowded, 2 4-flowered; sepals lanceolate, acute, unequal, the inner ones half as long as the oblong obtuse-angled acute capsule; seeds with a long and tail-like appendage at each end, white and shining. — Pine barren swamps and bogs. Sept. — Stem 2° high. Leaves 2′ – 6′ long, strongly knotted. Capsules light brown, turning almost black.

15. **J. asper,** Engelm. Rigid, erect (2° – 3° high), papillose-scabrous; leaves terete; panicle erect; heads 2 – 6-flowered; sepals ovate-lanceolate, strongly nerved, very acute, the inner ones longer, and barely shorter than the beak-pointed capsule; seeds oblong, finely ribbed. — Swamps, Henderson County, North Carolina (*Canby*), and northward.

16. **J. militaris,** Bigel. Stout (2° – 4° high), 1-leaved; heads panicled, 5 – 10-flowered; sepals lanceolate, acute, as long as the ovate, taper-beaked, 1-celled capsule; stamens 6; seeds globose-ovate, abruptly pointed. — In water, Alabama (*Drummond*), and northward. — Probably not within my limits.

* * * *Leaves terete, obscurely knotted: stamens* 6: *flowers solitary, in slender 1-sided cymose panicles, mostly transformed into a tuft of rudimentary leaves.*

17. **J. pelocarpus,** E. Mey. Rhizoma creeping, filiform; stems slender (6′ - 10′ high); leaves filiform, tender; panicle compound, diffuse; the small flowers somewhat scattered; sepals acutish, shorter than the oblong taper-pointed capsule; seeds without appendages. — Sandy margins of ponds and swamps, South Carolina, and northward. July.

Var. **crassicaudex,** Engelm. Rhizoma thick; stems taller (1° – 2°); panicles larger, and diffuse. — Grassy margins of ponds near the coast, West Florida. July – Sept.

* * * * *Leaves knotless, concave or flattened.*

18. **J. marginatus,** Rostk. Stems flattened (1° - 2° high); leaves linear, flat or concave; panicle mostly simple; heads few – many-flowered, rarely solitary or by pairs; flowers triandrous; exterior sepals lanceolate or ovate-lanceolate, awn-pointed; the interior oblong, obtuse, broadly margined, about as long as the globular dark brown capsule; seeds oblong, acute at each end. (J. cylindricus, *Curtis*, the many-flowered heads cylindrical.) — Var. BIFLORUS. Stems taller (2° - 3° high): panicle decompound, diffuse; heads very numer-

ous, 2 – 4-flowered; seeds narrower and more-pointed. — Ditches and low grounds. July – Sept. — The variety in the lower districts.

19. **J. bufonius,** L. Annual; stems low (2′ – 8′ high), tufted; often branched; leaves very narrow; panicles forking; flowers solitary or 3 – 6 in a cluster; sepals whitish, lanceolate, acute, longer than the oblong obtuse pale capsule. — Damp cultivated ground, apparently introduced. April – May.

20. **J. leptocaulis,** Torr. & Gray. Stems low (6′ – 12′ high), cæspitose, slender; leaves flat, shorter than the stem; heads 1 – 5, 3 – 6-flowered; sepals ovate-lanceolate, nearly equal, awn-pointed, longer than the 3 – 6 stamens, and obovate capsule; seed obovate, apiculate. — Georgia, Tennessee, and westward.

21. **J. repens,** Michx. Stems mostly creeping or floating; leaves linear-sword-shaped, those of the stem nearly opposite; heads cymose, scattered, top-shaped, several-flowered; sepals rigid, lanceolate-subulate, slender-pointed, the exterior strongly keeled, and as long as the linear-oblong obtuse capsule, much shorter than the flat interior ones; filaments exserted. — Miry banks of streams and ponds, Florida to North Carolina. July. — Stems 6′ – 2° long.

ORDER 156. PONTEDERIACEÆ. (PICKEREL-WEED FAMILY.)

Perennial aquatic or marsh herbs, with perfect mostly irregular flowers from a 1-leaved spathe. — Perianth corolla-like, unequally 6-cleft or 6-parted, imbricated in the bud, withering-persistent. Stamens 3 – 6, more or less unequal, and unequally inserted on the throat of the perianth: anthers 2-celled, erect, introrse. Ovary free. Style single: stigma 3 – 6-lobed. Capsule 1 – 3-celled, 1 – many-seeded Seeds anatropous. Embryo slender, in mealy albumen.

1. PONTEDERIA, L. WAMPEE, PICKEREL-WEED.

Perianth funnel-shaped, 2-lipped, with the upper lip 3-lobed, the lower 3-parted, the curved tube fleshy and coiled in fruit. Stamens 6, unequally inserted; the three lower ones exserted, the three upper short and often imperfect: anthers oval, blue. Ovary 3-celled, two of the cells empty, the other with a single suspended ovule. Style slender. Capsule (utricle) 1-seeded. — Rhizoma thick and creeping. Stem erect, bearing above the middle a single short-petioled leaf, and at the summit a hairy spike of blue flowers, from a 1-leaved spathe. Radical leaves long-petioled, sheathing.

1. **P. cordata,** L. Stem and terete petioles erect (2° – 3° high); leaves (3′ – 8′ long) varying from round-cordate to lance-oblong, obtuse, finely nerved; spike dense, cylindrical (2′ – 4′ long), the peduncle enclosed in the convolute spathe; upper lobe of the hairy perianth spotted with yellow, the tube 6-ribbed. — Miry margins of ponds and rivers, Florida, and northward. July – Sept.

2. HETERANTHERA, Ruiz & Pavon.

Perianth salver-form, 6 lobed, the tube long and slender. Stamens 3, nearly equal. Capsule 1-celled, with 3 parietal placentæ, many-seeded.

* *Flowers peduncled: lobes of the perianth unequal: anthers of 2 forms. capsule imperfectly 3-celled: leaves oblong or reniform, long-petioled.*

1. **H. reniformis,** R. & P. Leaves reniform; spathes 3–5-flowered; perianth white. — North Carolina and Tennessee. August.

2. **H. limosa,** Vahl. Leaves oblong; spathes 1-flowered; perianth blue. — Tennessee, and northward. August.

* * *Flowers sessile: lobes of the perianth nearly equal: anthers alike, sagittate: capsule 1-celled: aquatic: leaves linear, sessile.*

3. **H. graminea,** Vahl. Stem long (1°–3°) and slender; spathe 1-flowered; perianth yellow. (Schollera, *Schreb.*) — Ponds and lakes, Florida, near the coast, and northward. July–August.

ORDER 157. COMMELYNACEÆ. (SPIDERWORT FAMILY.)

Herbs, with chiefly fibrous roots, jointed and leafy stems, and perfect or somewhat polygamous often irregular flowers. — Perianth of three herbaceous or colored persistent sepals, and three fugacious petals. Stamens 6, hypogynous, perfect, or a part of them sterile: anthers 2-celled, often of two forms. Styles single: stigma entire. Ovary free from the perianth, 2–3-celled, with 1–several orthotropous ovules in each cell. Capsule loculicidally 2–3-valved, 1–several-seeded. Embryo pulley-shaped, placed in a cavity of the albumen opposite the hilum. — Plants somewhat succulent. Stems often branching. Sheaths of the leaves entire or open.

1. COMMELYNA, Dill. DAY-FLOWER.

Flowers irregular. Sepals mostly colored. Petals fugacious, two of them kidney-shaped and long-clawed, the other smaller. Stamens unequal, three of them fertile, the others with 4-lobed sterile anthers: filaments beardless. Capsule 1–3-celled, the cells 1–2-seeded, or one of them frequently empty. — Stems branching. Leaves flat, oblong, or lanceolate, on sheathing petioles; the floral ones cordate and spathe-like, folded, and enclosing the few-flowered peduncle. Flowers blue.

1. **C. nudiflora,** L. Stem smooth, filiform, and creeping; leaves short (1′–2′ long), ovate-lanceolate, obtuse; sheaths fringed at the throat; spathes nearly crescent-shaped, obtuse at the base, lateral and terminal; peduncles by pairs; one of them bearing 3–4 small fertile flowers included in the spathe; the other long-exserted, filiform, 1-flowered; odd petal ovate, sessile; seeds reticulated. — Low grounds, Florida to North Carolina. July–Sept. ① ? — Stem 1°–2° long.

2. **C. Virginica,** L. Pubescent; stem erect; sheaths hairy; leaves (4′–6′ long) oblong lanceolate, acuminate, thin, rough above; spathe (when opened) round ovate, contracted at the base; sterile peduncle included; petals large, the odd one lanceolate, capsule 2–3-seeded. (C. erecta, *Ell.*) — Varies (C. angustifolia, *Michx.*) with the stems smooth, ascending; leaves narrowly

lanceolate, rather rigid, and like the sheath nearly smooth; flowers smaller, seeds pulverulent. — Light or sandy soil, Florida, and northward. May - Sept. ♃ — Stem 1° - 2° high. The spathes contain a viscid secretion until the seeds mature.

3. **C. hirtella,** Vahl. Stem stout, erect; leaves (3′ - 5′ long) lanceolate or oblong, acute, very rough above, the sheaths fringed with brown hairs; spathes crowded, short-stalked, hooded, narrowed at the base; sterile peduncle included; petals nearly alike, the odd one smaller; seeds transversely oblong. — Shady swamps, Florida, and northward. August - Sept. ♃ — Stem 1° - 1½° high.

4. **C. erecta,** L. Upper sheaths and spathes pubescent, otherwise glabrous; stems mostly clustered and simple, 1° high; leaves linear-lanceolate, 3′ - 4′ long; spathes single, hooded; cells of the capsule 1-seeded, all dehiscent; seeds smooth. — Dry sandy soil in the lower districts. July - Sept.

2. TRADESCANTIA, L. Spiderwort.

Flowers regular. Sepals herbaceous. Petals similar, ovate, fugacious. Stamens all fertile, the filaments hairy: anthers kidney-shaped. Ovary 3-celled, with two ovules in each cell. Capsule 2 - 3-celled, the cells 1 - 2-seeded. — Perennial herbs, with narrow keeled leaves, both the floral ones and those of the stem. Flowers in umbel-like clusters, axillary and terminal, expanding in the morning. Fruiting pedicels recurved.

1. **T. Virginica,** L. Smooth, or villous with glandless hairs; leaves linear, broadest at the base, mostly purple-veined; clusters axillary and terminal, sessile, many-flowered; flowers closely packed in 2 rows in the bud, each with an ovate scarious bract at the base; petals blue, like the style and densely bearded filaments, twice as long as the lanceolate-ovate sepals. — Dry sandy soil. March - May. — Stems ½° - 2° high. Flowers 1′ in diameter.

2. **T. pilosa,** Lehm. Stem often branched, and, like the sheaths, villous or nearly smooth; leaves oblong, narrowed at the base, pubescent on both sides; clusters axillary and terminal, sessile, dense, many-flowered; the pedicels and oblong sepals villous with glandular hairs; seeds transversely oblong, pitted on the back; petals blue. — Light soil in the upper districts. May - July. — Stem 1° - 1½° high. Leaves 1′ - 1½′ wide. Flowers ¾′ in diameter.

3. **T. rosea,** Vent. Stem simple, slender, smooth; leaves linear-lanceolate, fringed on the margins; clusters solitary or by pairs, on long (3′ - 6′) terminal peduncles, few-flowered; petals bright rose-color, three times as long as the ovate-lanceolate sepals. — Light fertile soil in the lower districts. June - August. — Stem 6′ - 8′ high. Flowers ½′ in diameter.

4. **T. Floridana,** Watson. Stem (4′ - 8′ long) tender, ascending from a creeping base, branching; leaves ovate or ovate-lanceolate, acute, ciliate at the base (¾′ or less long), the floral ones bract-like; flowers very small (2″ - 3″ wide), terminal, shorter than their pedicels; sepals pubescent. — Coast of East Florida (*Curtiss*).

ORDER 158. MAYACACEÆ. (MAYACA FAMILY.)

Creeping moss-like marsh herbs, with very numerous narrow and pellucid leaves, and solitary axillary flowers. Represented only by

1. MAYACA, Aublet.

Flowers regular, perfect. Sepals 3, lanceolate, herbaceous, persistent. Petals 3, obovate, deciduous or withering-persistent. Stamens 3, free, inserted on the base of the sepals, persistent: anthers erect, spoon-shaped, imperfectly 2-celled, emarginate at the apex, introrse. Ovary 1-celled. Ovules few, orthotropous, fixed to three parietal placentæ. Style single, terminal, persistent: stigma minutely 3-lobed. Capsule rugose, 3-valved; the valves bearing the placentæ in the middle. Seeds globose, furrowed and pitted, pointed at the apex. Embryo minute at the apex of the albumen. — Stems branching, tender. Leaves alternate, linear, emarginate. Flowers white or purple.

1. **M. Michauxii,** Schott & Endl. Fruiting peduncles longer than the leaves, recurved; capsule few-seeded; flowers (3″ – 4″ wide) white or pale purple. — Springy places, Florida to North Carolina. June – July. — Stems 2′ – 6′ long. Leaves 3″ – 4″ long.

ORDER 159. XYRIDACEÆ. (YELLOW-EYED GRASS FAMILY.)

Perennial stemless marsh herbs, with fibrous roots, sword-shaped equitant leaves, and perfect irregular fugacious flowers, collected in a dense imbricate-bracted spike. Sepals 3; the two lateral ones glumaceous, keeled, persistent; the inner one hyaline, enfolding, in the bud, the petals and stamens. Petals 3, rounded, distinct, or united by their long claws. Stamens 3, and inserted on the summit of the claws of the petals, or 6, and the alternate ones sterile, hypogynous, and commonly bearded with jointed hairs: anthers erect, 2-celled, extrorse. Ovary free, 1 – 3-celled. Style single, 3-parted. Capsule 3-valved, many-seeded. Seeds minute, orthotropous. Embryo minute, at the apex of the albumen. — Scape commonly twisted or spiral, 2-edged near the summit, with a spathe-like sheath at the base. Spikes mostly solitary.

1. XYRIS, L. YELLOW-EYED GRASS.

Petals distinct. Stamens 6, the alternate ones hypogynous, sterile, commonly bearded at the summit, and slightly cohering with the claws of the contiguous petals. Stigmas entire. Capsule 1-celled, 3-valved, the valves bearing the placentæ in the middle. Seeds very numerous, finely ribbed. — Spikes ovoid or oblong. Bracts coriaceous or somewhat crustaceous, rounded, closely imbricated, convex and discolored on the back; the lower ones empty. Keel of the lateral sepals mostly winged and variously lacerated. Flowers yellow.

§ 1. *Sheath of the scape longer than the leaves. Biennials?*

1. **X. brevifolia,** Michx. Scape nearly terete, smooth; leaves narrowly linear, smooth on the edges; spike globose, light brown, few-flowered; bracts soon lacerated at the apex; lateral sepals lanceolate, rigid, crenulate on the wingless keel; petals obovate, rounded; sterile filaments sparingly bearded. — Low sandy pine barrens, Florida to North Carolina. April – May. — Plant light brown. Scape 6′ – 12′ high, clustered. Leaves 1′ – 3′ long. Spike 2″ – 3″ long. Petals 2″ long.

2. **X. flabelliformis,** Chapm. Scape filiform, smooth, terete below, slightly compressed above; leaves very short, linear-lanceolate, smooth, spreading like a fan, laterally curved; spikes oblong, mostly acute, few-flowered, angular; bracts light brown, entire; lateral sepals lanceolate, short-fringed on the wingless keel; petals obovate; sterile filaments often beardless. — Low pine barrens, near the coast, West Florida. April – May. — Scape 4′ – 12′ high. Leaves ½′ – 1′ long. Spikes 2″ – 4″ long. Petals 2″ long.

§ 2. *Sheath of the scape shorter than the leaves. Perennials.*

* *Sterile filaments bearded: sepals included.*

+ *Lateral sepals fringed on the keel.*

3. **X. ambigua,** Beyr. Scape rigid, finely furrowed, rough, 2-edged above, 1-angled below; leaves linear-lanceolate, rough on the edges; spike ovate-lanceolate or oblong, even, often acute, many-flowered; bracts light brown, oval, not crowded on the spike; lateral sepals lanceolate, tapering at each end, shining, narrowly winged; petals round-obovate; seeds ovoid. — Open grassy pine barrens, Florida to North Carolina. July – Sept. — Scape 2° – 3° high, mostly solitary. Leaves 6′ – 12′ long. Spikes 9″ – 15″ long. Petals ½′ long.

4. **X. stricta,** Chapm. Scape flattened and broadly margined, rough-edged above, smooth and 1 – 2-angled below, slightly striate; leaves long, linear, smooth; spikes oblong or cylindrical, obtuse, many-flowered; bracts dark brown, orbicular, crowded on the spike; lateral sepals broadly winged above the middle, narrowed below; petals small, wedge-obovate; seeds ovoid. — Shallow ponds in the pine barrens. West Florida. July – Sept. — Scapes slender, clustered, 2° – 3° high. Leaves 1° – 1½° long. Spikes 9″ – 12″ long. Petals 2″ long.

5. **X. flexuosa,** Muhl. Somewhat bulbous; scape smooth, 2-edged above, nearly terete below; leaves linear, smooth; spikes globose, few-flowered; lateral sepals lanceolate, wingless. (X. bulbosa, *Kunth.*) — Swamps in the upper districts of Georgia, and northward. July – Sept. — Scape 6′ – 12′ high. Leaves 4′ – 8′ long. Spike 3″ – 5″ long.

+ + *Lateral sepals broadly winged, and variously toothed or fimbriate.*

6. **X. Elliottii,** Chapm. Scape slender, flattened and 2-edged throughout, or 1-edged below, roughish and mostly spiral; leaves narrowly linear, sharp-edged, twisted; spike few-flowered, elliptical, obtuse; lateral sepals linear, the wing cut-toothed above the middle; petals obovate. (X. brevifolia, *Ell.* ex descr.) — Wet grassy pine barrens, Florida to South Carolina. July. — Scape 1° – 1½° high. Leaves 6′ – 9′ long. Petals 3″ long.

7. **X. difformis,** Chapm. Scapes clustered, slender, smooth, widely 2-edged above, terete or 1-2-angled below; leaves thin, linear lanceolate, smooth; spikes many-flowered, ovate, acute, even, often 2-4-cleft; lateral sepals lanceolate, with the broadly winged keel incised-fimbriate; petals obovate; seeds elliptical, smooth. — Swamps near the coast, West Florida. July. — Scapes 1° - 1½° high. Leaves 9′ - 15′ long. Spikes 6″ - 9″ long. Petals small.

8. **X. serotina,** Chapm. Scapes clustered, twisted, and mostly spiral, rough-angled and 2-edged above, striate; leaves linear-lanceolate, rigid, rough on the edges; spikes many-flowered, ovoid, obtuse, dark brown, even; bracts round-obovate, closely imbricated; lateral sepals linear, narrowly winged above, fimbriate and at length incised; petals small, obovate; seeds ovoid, pulverulent. — Varies with shorter leaves (2′ - 3′), and smaller globose or ovate heads. — Pine barren swamps, West Florida. Sept. - Oct. — Scapes 1° - 1½° high. Leaves 8′ - 12′ long. Spikes 6′ - 9′ long. Petals 2″ long.

9. **X. elata,** Chapm. Scapes elongated, slender, smooth, terete below, 2-edged above; leaves long, linear, smooth; spikes rugose, oblong or oval, often acute, many-flowered; scales dark brown; lateral sepals linear-lanceolate, sparingly toothed on the narrowly winged keel; petals wedge-obovate; seeds elliptical, smooth. — Sandy swamps near the coast, West Florida. July - August. — Scapes 3° - 4° high. Leaves 1½° - 2° high. Spikes ½′ - 1′ long. Petals 2″ long.

10. **X. Caroliniana,** Walt. Scapes several, smooth, rigid, 1 - 2-angled below, compressed and 2-edged above; leaves linear or linear-lanceolate, smooth; spikes rugose, oblong-ovate, obtuse, many-flowered; bracts light brown, thick, the margins thin and soon lacerate; lateral sepals linear-lanceolate, acute, the narrowly winged keel cut-fringed above the middle; petals obovate; seeds ovoid. — Shallow ponds and swamps, Florida, and northward. July - August. — Scapes 1° - 2° high. Leaves 6′ - 15′ long. Spikes 6″ - 12″ long.

11. **X. iridifolia,** Chapm. Rigid, smooth and shining; scape stout, terete or 1-angled below, dilated and 2-edged above; leaves long, strap-shaped; spikes oval or oblong, obtuse, rugose, many-flowered; bracts dark brown, very thick, strongly convex; lateral sepals linear, membranaceous, the keel fimbriate and at length incised throughout; petals round-obovate; seeds lanceolate, angled, pulverulent. — Shallow ponds, Florida. August - Oct. — Scape 2° - 3° high, 2″ - 3″ in diameter. Leaves 2° - 2½° long, ½′ - 1′ wide. Spikes 1′ long. Petals 3″ long.

12. **X. platylepis,** Chapm. Scapes mostly twisted and spiral, angular below, 2-edged above, roughish; leaves linear and lanceolate, twisted, smooth; spikes large, oblong or cylindrical, obtuse, many-flowered; bracts pale brown or whitish, orbicular, thin, closely imbricated; lateral sepals linear, the keel narrowly winged, fimbriate toward the apex; petals small; seeds elliptical, smooth (X. flexuosa, *Ell.* ?) — Low sandy places, Florida to South Carolina. July - Sept. — Scape 2° - 3° high. Leaves 9′ - 15′ long. Spikes ¾′ - 1½′ long.

* * *Sterile filaments bearded: sepals exserted.*

13. **X. fimbriata,** Ell. Not bulbous; scape tall, furrowed, rough, 2-edged above; leaves long, strap-shaped, smooth; spikes ovate, acute, many-flowered; lateral sepals long fimbriate above the middle; petals small. — Ponds and miry places, Florida, and northward. Sept. - Oct. — Scapes 3° - 4° high. Leaves 1½° - 2° long. Spikes 9″ - 12″ long. Petals 3″ long.

14. **X. torta,** Smith. Bulbous; scape nearly terete, 1-edged, smooth, mostly spiral; leaves linear, rigid, concave, with rounded edges, mostly spiral; spikes pale, lanceolate or cylindrical, acute, lateral sepals winged and fimbriate above the middle; petals large, round-obovate. — Sandy, often dry soil, Florida, and northward. July - Sept. — Scape 1½° - 2° high. Leaves few, 6′ - 12′ long, tumid and dark brown at the base. Spikes 1′ - 1½′ long. Petals 9″ long, expanding at midday.

* * * *Sterile filaments beardless: leaves filiform.*

15. **X. Baldwiniana,** R. & S. Smooth; scape slender, terete or 1-angled; leaves filiform or bristle-like, compressed; spikes ovoid, few flowered; lateral sepals lanceolate, the narrowly winged keel cut-serrate; petals obovate; seeds linear-oblong, smooth. — Open grassy pine-barren swamps, Florida to North Carolina. July - Sept. — Scapes clustered, 10′ - 12′ high. Leaves 4′ - 6′ long. Spikes 2″ - 4″ long. Petals 3″ long.

ORDER 160. ERIOCAULONACEÆ. (PIPEWORT FAMILY.)

Perennial chiefly stemless marsh herbs, with narrow tufted leaves, and minute monœcious or diœcious flowers, collected in a dense hairy chaffy-bracted head. — *Stam. Fl.* Sepals 2 - 3. Corolla tubular, bilabiate or 3-toothed, or sometimes wanting. Stamens 2 - 6: anthers introrse. — *Pist. Fl.* Sepals and petals 2 - 3. Ovary 2 - 3-celled, with a single orthotropous ovule in each cell. Style 2 - 3-parted. Capsule loculicidally 2 - 3-valved, 1 - 3-seeded. Embryo minute at the apex of the albumen. — Leaves concave and partly clasping at the base. Scape furrowed and commonly twisted, with a spathe-like sheath at the base. Exterior scales broader, empty, and involucrate. Flowers fringed with white club-shaped hairs. Corolla white.

Synopsis.

1. **ERIOCAULON. Stamens 4. Anthers 2-celled. Style 2-parted. Corolla 2-lipped.**
2. **PÆPALANTHUS. Stamens 3. Anthers 2-celled. Style 3-parted, the lobes entire.**
3. **LACHNOCAULON. Stamens 3. Anthers 1-celled. Style 2 - 3-parted, the lobes entire, or 2-cleft.**

1. ERIOCAULON, L. PIPEWORT.

Flowers monœcious, each in the axil of a scale-like bract. Sepals 2 - 3. Corolla of the staminate flowers tubular, 2-lipped or 3-lobed; of the pistillate flowers 2 - 3-petalous. Stamens 4 or 6: anthers 2-celled. Style 2 - 3-parted: stigmas 2 - 3. Capsule 2 - 3-celled, 1 - 3-seeded — Scapes single or numerous, mostly from a short and villous rootstock. Lobes of the corolla furnished with a blackish gland on the inner face, commonly bearded with club-shaped hairs. — The following species are all tetrandrous, with a 2-parted style and a 2-celled capsule.

1. **E. decangulare,** L. Leaves from lanceolate to linear-subulate, concave, obtuse; scapes single or clustered; head compact, hemispherical, at length globose; scales of the involucre numerous small, oblong, acutish, straw-colored, or light brown, passing into the linear-spatulate acuminate bearded bracts, these longer than the flower. — Boggy places, Florida, and northward. July – Sept. — Scapes 2° – 3° high. Leaves 4′ – 12′ long, 2″ – 6″ wide.

2. **E. gnaphalodes,** Michx. Leaves lanceolate-subulate, flat, very acute, rigid, or the immersed ones thin and pellucid; scapes few or single; head hemispherical; scales of the involucre few, oblong or roundish, very obtuse, turning lead-color; bracts shorter than the flower, spatulate, their broad and bearded summit turning blackish. — Swamps and shallow ponds, Florida, and northward. April – June. — Scapes 1½° – 2° high. Leaves 2′ – 6′ long.

3. **E. septangulare,** Withering. Leaves short (1′ – 2′ long), subulate-linear, pellucid; scape weak and slender; head small, hemispherical, densely white-bearded; scales of the involucre rounded; bracts spatulate. — Wet pine barrens, Mississippi (*Prof. Hilgard*).

4. **E. Ravenelii,** Chapm. Smooth throughout; root fibrous; leaves linear, acute, flat; scapes low and slender, clustered; heads small (1″ – 2″ in diameter), globose; scales of the involucre few, oblong, very obtuse, whitish, pellucid; bracts dark brown, beardless. — Wet places, Florida to South Carolina. — Scapes 1′ – 6′ high. Leaves 1′ – 2′ long.

2. PÆPALANTHUS, Martius.

Flowers monœcious. *Staminate Fl.* Sepals 3. Corolla tubular, 3-toothed. Stamens 3: anthers 2-celled. *Pistillate Fl.* Sepals and petals 3. Style 3-parted, the divisions entire: stigmas 3. Capsule 3-celled. — Habit of the preceding.

1. **P. flavidulus,** Kunth. Leaves short (1′ – 2′ long), subulate, smooth, or sparingly pubescent; scapes numerous, filiform, 5-furrowed, hairy; heads hemispherical, yellowish white; scales of the involucre oblong, acute, smooth; flowers slender, pedicelled; sepals linear, acute; stamens and styles exserted. (Eriocaulon, *Michx.*) — Low sandy pine barrens. April – May. — Scape 6′ – 12′ high.

3. LACHNOCAULON, Kunth.

Flowers monœcious. *Staminate Fl.* Sepals 3, equal. Corolla none. Stamens 3, with the filaments united below into a club-shaped tube. anthers 1-celled. *Pistillate Fl.* Sepals 3, equal. Corolla none, or reduced to tufted hairs. Style club-shaped, 2 – 3-parted, the divisions entire or 2-cleft: stigmas 2 – 6. Capsule 2 – 3-celled. — Habit of the two preceding. Bracts and sepals blackish, fringed with club-shaped hairs.

1. **L. Michauxii,** Kunth. Leaves linear (1′–2′ long), hairy, becoming smoothish; scapes slender, hairy, 4-furrowed (1° high); heads globose; bracts and sepals spatulate, obtuse, fringed with white hairs; divisions of the style 3, each 2-cleft. — Low grassy pine barrens, Florida to North Carolina. May–June, growing in tufts. — Heads 2″–3″ wide.

Var. **minor.** Scapes 2′–3′ high; heads 1½″ wide. — Low pine barrens, Bristol, Florida. May–July.

2. **L. glabrum,** Kornicke. Cæspitose; leaves linear, smooth (1′ long); scapes numerous, smooth, 5-furrowed (3′–5′ high); heads globose, becoming oblong, dark brown; bracts and sepals spatulate-obovate, obtuse, slightly fringed with short brownish hairs; divisions of the style 3, entire. — Sandy springy places, Florida, and westward. June–Oct. — Heads 3″ long.

ORDER. 161. CYPERACEÆ. (SEDGE FAMILY.)

Slender herbs, with simple solid mostly 3-angled stems (*culms*), and grass-like leaves, with closed sheaths. Flowers spiked, each in the axil of a single (rarely 2–4) scale-like bract (*scale*). Perianth composed of hypogynous scales or bristles, or none. Ovary 1-celled, with a single erect anatropous ovule, forming in fruit a lenticular or 3-angled achenium (*nut*), which is often crowned with the persistent jointed base of the style (*tubercle*). Stamens 1–12: anthers erect. Style 2–3-cleft or parted. Embryo minute at the base of the albumen.

Synopsis.

TRIBE I. **CYPEREÆ.** Flowers perfect: spikelets 1–many-flowered: scales one to each flower, imbricated in 2 rows: perianth bristly, or none.

* Perianth none: nut beakless.

1. CYPERUS. Spikelets few–many-flowered: inflorescence terminal.
2. KYLLINGIA. Spikelets 1-flowered: inflorescence terminal, capitate.

* * Perianth bristly: nut beaked.

3. DULICHIUM. Spikes lateral and terminal: spikelets many-flowered.

TRIBE II. **LIPOCARPHEÆ.** Flowers perfect: spikes many-flowered: scales 2–4 to each flower; the exterior ones imbricated in many rows: perianth none.

4. HEMICARPHA. Inner scale 1: involucre mostly 1-leaved, erect.
5. LIPOCARPHA. Inner scales 2: leaves of the involucre 2 or more, spreading.

TRIBE III. **SCIRPEÆ.** Flowers perfect: spikes commonly many-flowered: scales one to each flower, imbricated in several (rarely 2) rows, all fruitful, or the lowest empty: perianth bristly, hairy, or wanting.

* Perianth of 3 bristles, alternating with 3 stalked scales.

6. FUIRENA. Nut pointed: scales of the clustered axillary and terminal spikes awned.

* * Perianth bristly, occasionally wanting.

7. ELEOCHARIS. Nut tubercled: culms leafless, sheathed at the base, bearing one terminal spike.
8. SCIRPUS. Tubercle none: culms mostly leafy at the base or throughout: spikes commonly numerous: perianth of 3–6 bristles.
9. ERIOPHORUM. Perianth of numerous long and woolly hairs: otherwise like Scirpus.

* * * Perianth none: style tumid at the base.

+ Scales imbricated in several rows: spikes terete.

10. **FIMBRISTYLIS.** Style deciduous: stigmas 2: nut lenticular or globose.
11. **TRICHELOSTYLIS.** Style deciduous: stigmas 3: nut 3-angled.
12. **ISOLEPIS.** Style persistent at the base: stigmas 3: nut 3-angled.

+ + Scales imbricated in 2 rows: spike compressed.

13. **ABILDGAARDIA.** Style 3-cleft, jointed to the 3-angled nut.

TRIBE IV. **RHYNCHOSPOREÆ.** Flowers perfect or polygamous: spikelets commonly few-flowered: scales one to each flower, imbricated in few-several rows, the lower ones empty, the upper mostly sterile; perianth bristly, or none.

* Perianth bristly (occasionally wanting in Rhynchospora).

14. **RHYNCHOSPORA.** Style 2-cleft or entire, dilated and persistent at the base: nut lenticular or globose.
15. **CHÆTOSPORA.** Style 3-cleft, deciduous: nut 3-angled: spikelets terminal.

* * Perianth none.

16. **PSILOCARYA.** Spikes terete, many-flowered, cymose: flowers perfect.
17. **DICHROMENA.** Spikes compressed, capitate: most of the flowers imperfect.
18. **CLADIUM.** Spikes few-flowered, only the uppermost flower perfect: nut globose.

TRIBE V. **SCLERIEÆ.** Flowers monœcious: sterile spike many-flowered: scales one to each flower, imbricated in few rows: fertile spike 1-flowered, with two or more scales: perianth none.

19. **SCLERIA.** Style 3-cleft, deciduous. Nut bony, globose or 3-angled.

TRIBE VI. **CARICEÆ.** Flowers monœcious, very rarely diœcious: sterile and fertile flowers on the same spike, or on separate spikes: scales one to each flower, imbricated in few-many rows: nut enclosed in a sac: perianth none.

20. **CAREX.** Bristles within the sac none. Spikes axillary and terminal.

1. CYPERUS, L.

Spikelets 2-many-flowered, commonly flat or compressed. Scales imbricated in two opposite rows, often decurrent on the jointed rachis, deciduous. Perianth none. Stamens 1-3. Style 2-3-cleft, deciduous. Nut lenticular or 3 angled. — Culms 3 angled (rarely terete), jointless, leafy or occasionally sheathed at the base. Spikelets numerous (rarely 1-2), disposed in single or umbellate heads or spikes, and surrounded with a leafy involucre. Rays sheathed.

§ 1. PYCREUS. — *Style 2-cleft: nut lenticular.*

* *Spikelets clustered on the common rachis, or capitate.*

1. **C. flavescens,** L. Umbel sessile or of 2-4 rays, shorter than the spikelets; spikelets 3-several in a cluster, oblong-linear, acute, spreading, 20-30-flowered; scales yellowish brown, ovate, obtuse, appressed; rachis margined; stamens 3; nut orbicular, black, smooth or papillose; culms clustered, 4′-10′ high; leaves and 3-leaved involucre narrowly linear. — Low grounds. July-August.

2. **C. diandrus,** Torr. Umbel of 2-5 short and unequal rays, the longer ones longer than the spikelets; spikelets lanceolate-oblong, acute, brownish or dark brown, spreading; scales ovate, obtuse, appressed, green on the keel; rachis margined; stamens 2; nut oblong-obovate, roughish, dull

gray. — Wet places, North Carolina, and northward. August. — Culms 4′–10′ high. Involucre 3-leaved.

3. **C. leucolepis,** Carey. Spikelets capitate, ovate-lanceolate, flat, acute, 5–7-flowered; scales ovate, mucronate, compressed-keeled, 7-nerved, the scarious sides broadly decurrent; style deeply 2-parted; stamens 2–3; nut (immature) oblong, lenticular; culms low (2′–3′), tufted, obtuse-angled, shorter than the smooth keeled leaves. — Damp cultivated grounds, Quincy, Middle Florida. August. — Head 3″–4″ in diameter, composed of 3–4 compact clusters; spikelets 1″ long, white.

* * *Spikelets scattered on the common rachis (spiked).*

4 **C. Nuttallii,** Torr. Umbel sessile or of 3–6 rays, 1′–2′ long; spikelets spreading, linear-lanceolate, acute, light or yellowish brown, 12–20-flowered, the lower ones commonly compound; scales rigid, oblong-ovate, acute or mucronate, appressed; stamens 2; nut oblong-obovate, very obtuse, grayish and minutely pitted; culms clustered, 3-angled, 4′–15′ high; leaves and involucre narrowly linear. — Salt or brackish soil, Florida, and northward. July–Sept.

5. **C. flavicomus,** Michx. Umbel compound, many-rayed; spikelets crowded, linear, acute, 12–30-flowered; scales loosely imbricated, yellowish, round-obovate, emarginate, with broad scarious margins, at length spreading; rachis broadly margined; stamens 3; nut obovate, black, smooth and shining, barely shorter than the scale; culms thick, obtuse-angled, 1°–3° high; leaves broadly linear, as long as the culm. — Low grounds and ditches, Georgia and South Carolina. May–Sept. — Involucre 3–5-leaved. Spikelets 6″–9″ long.

6. **C. polystachyus,** Rottb. Umbel of 4–8 rays, simple or somewhat compound; spikelets crowded, linear, acute, 15–25-flowered; scales thin, ovate, acute, closely imbricated; rachis slightly margined; stamens 2; nut linear-oblong or somewhat club-shaped, short-pointed, grayish and minutely pitted; culms filiform, 3-angled, 6′–12′ high; leaves and elongated involucre very narrow. — Margins of ponds and streams, Florida to North Carolina. July–Sept. — Rays 1′–2′ long. Spikelets 4″–7″ long.

§ 2. CYPERUS proper. — *Style 3-cleft: nut 3-angled.*

1. *Umbel simple or compound: spikelets spreading, forming loose or compact spikes at the summit of the rays: scales rigid,* 7–11*-nerved: joints of the rachis commonly conspicuously winged: stamens* 3.

* *Spikelets approximate or crowded on all sides of the common rachis.*

+ *Spikelets compressed.*

7. **C. strigosus,** L. Umbel large, 4–8-rayed, simple or compound, much shorter than the involucre; involucels bristly, shorter than the dense oblong spikes; spikelets linear, acute, 6–10-flowered; scales somewhat scattered on the very slender rachis, oblong-lanceolate, acute, much longer than the linear-oblong acute minutely dotted dull nut; culms (1°–3° high) tumid at the base, as long as the broadly linear leaves. — Swamps and damp soil. July–Sept. — Rays 4′–6′ long. Spikelets ½′–¾′ long. Sheath of the rays bristle-pointed.

8. **C. stenolepis,** Torr. Umbel simple or compound, 6–9-rayed, shorter than the 3–6-leaved involucre; sheaths of the rays truncate; involucels

bristly, shorter than the ovate compact spikes; spikelets linear, acute, 5 – 8-flowered; scales linear lanceolate, acute, involute, spreading, much longer than the oblong-linear acute dull and minutely pitted nut; culms smooth (2° – 3° high); leaves very rough on the margins, whitish beneath. — Swamps and wet places, Florida to North Carolina. August – Sept. — Culm rather slender, longer than the leaves. Spikelets 6″ – 8″ long.

9. **C. brunneus,** Swartz. Umbel compound, of 4 – 6 rays; spikes ovate or oblong, dense; spikelets spreading (4″ long), linear-lanceolate, 8 – 10-flowered, acute; scales oblong-ovate, acute, spreading, 9 – 11-nerved, thrice the length of the oblong-obovate pointed blackish nut; culms obtuse-angled, shorter than the (3° – 4° long) whitish long-tapering leaves. — Sandy shores, South Florida. Oct. ♃ — Culm 2° – 3° high. Leaves rough-edged. Rays 2′ – 3′ long. Spikelets light brown. Joints of the rachis broadly winged.

10. **C. erythrorhizos,** Muhl. Umbel 3 – 12-rayed, shorter than the involucre; spikelets very numerous, narrow-linear, 12 – 50-flowered; scales minute, oblong-ovate, yellowish and glossy on the sides; wings of the rachis at length free; nut oval, compressed-3-angled; culms obtuse-angled; leaves pale beneath; involucels leafy, longer than the spikes. — Ponds and ditches. July – Sept. ① — Culms ½° – 4° high. Leaves 1″ – 14″ wide. Spikelets 2″ – 8″ long.

11. **C. Halei,** Torr. Umbel many-rayed; spikes densely clustered, cylindrical, ⅓′ – ¾′ long, the involucels few and linear; spikelets flat, 12 – 14-flowered; scales brown, sharply keeled, 5-nerved; nut triquetrous; culms 2° – 3° high, round-angled. — Marshes, Florida, and westward.

12. **C. dissitiflorus,** Torr. Umbel simple, 3 – 4-rayed; spikelets scattered along the upper portion of the slender rays, lanceolate, compressed, acute, 5 – 7-flowered; scales oblong-lanceolate, acute; nut oblong-obovate, compressed-triangular; culms filiform (1° – 2° high); leaves narrow-linear. — Mississippi, Tennessee, and westward.

+– +– *Spikelets terete or angular.*

++ *Scales closely imbricate: spikelets, short, oblong.*

13. **C. tetragonus,** Ell. Umbel of 6 – 12 slender rays; spikes cylindrical, loose; spikelets horizontal, short (2″ – 3″ long), 4-angled, 4 – 6-flowered; scales ovate, 9 – 11-nerved, twice as long as the oblong dull nut; culms mostly slender, 1° – 2° high, as long as the leaves; involucre many-leaved. — Dry sandy soil, along the coast, Florida to North Carolina. August – Sept. ♃ — Spikes 1′ – 1½′ long, 5″ wide, those on the longer rays commonly compound. Rays 3′ – 5′ long.

14. **C. ligularis,** L. Umbel many-rayed; spikes compact, cylindrical, compound, pale; spikelets short (2″ – 3″ long), spreading, nearly terete, 7-flowered; scales thin, ovate, acute, 7-nerved, twice the length of the obovate triangular acute nut; rachis broadly winged; culms stout, nearly terete (2° – 3° high), glaucous, like the broadly linear rough-edged leaves. — Wet sandy places, Punta Rassa, South Florida..

++ ++ *Scales rather distant: spikelets linear.*

15. **C. speciosus,** Vahl. Umbel 4 – 6-rayed; spikes loose, mostly shorter than the leafy involucels; spikelets spreading or reflexed, linear-subulate,

terete, 10-12-flowered; scales oblong, obtuse, faintly nerved, appressed; nut oblong, compressed-3-angled; culms slender, obtuse-angled. — Swamps and ditches. August-Sept. ① — Culm 2°-3° high. Spikelets 6″-8″ long, flexuous in fruit.

16. **C. distans,** L. Umbel large, compound, 8-10-rayed; spikelets filiform, 4″-6″ long, spreading, 8-10-flowered; scales oblong, obtuse, faintly nerved, twice as long as the winged joints; nut oblong, 3-angled; culms 2°-3° high. — Wet pine woods, North Carolina.

17. **C. refractus,** Engelm. Umbels mostly simple, 3-9-rayed, 3′-9′ long; spikes loose; spikelets filiform, terete, 6-10-flowered, 9″-12″ long, at length refracted; scales oblong, obtuse, about twice the length of the oblong triquetrous nut and the winged joints; culms slender, 1°-2° high, commonly exceeding the rough-edged leaves. — Georgia, Tennessee, and westward.

* * *Spikelets compressed, somewhat 2-ranked, mostly few and scattered on the common rachis: perennials, with creeping tuber-bearing rootstocks: flowers mostly abortive.*

18. **C. esculentus,** L. Umbel mostly simple, erect, 5-6-rayed, shorter than the 3-5-leaved involucre; spikelets linear, spreading, 12-24-flowered, the lower ones often clustered; scales oblong, obtuse or short mucronate, compressed-keeled, thin-margined, spreading at the apex, yellowish brown; nut oblong, triquetrous, acute. — Sandy soil near the coast, Florida, and northward. July-Sept. — Culms 1°-1½° high, acute-angled, longer than the erect smooth leaves. Rays 2′-4′ long. Spikelets 6″-8″ long. Whole plant yellowish.

Var. **macrostachyus,** Bœckl. Larger (2°-3° high); spikelets longer (1′ long) and broader, 30-40 flowered; scales acute, rounded on the back. — Coast of Florida, and westward.

19. **C. rotundus,** L. Umbel simple or compound, 3-8-rayed, mostly longer than the 3-leaved involucre; spikes composed of 3-9 scattered linear flat 20-30-flowered spikelets; scales oblong, obtuse, appressed, 7-nerved on the green keel, the membranaceous sides dark chestnut; nut obovate; culms smooth, slender, longer than the broadly linear crowded spreading rough leaves. — Sandy soil, along the coast. August-Sept. — Culm 9′-18′ high. Rays slender, 2′-4′ long. Spikelets ½′-1′ long.

2. *Umbel compound: spikelets compressed, many-flowered, scattered in loose spikes at the filiform summit of the rays: scales thin, 5-nerved, separate: joints of the rachis slightly margined: stamens 2.*

20. **C. Iria,** L. Umbel 6-8-rayed, erect, shorter than the 3-4-leaved involucre; spikelets erect-spreading, oblong-linear, 12-24-flowered; scales spreading, nearly orbicular, obtuse or emarginate, short-mucronate, 5-nerved on the green keel, the thin whitish sides minutely pitted; nut oblong-obovate, abruptly-pointed; style very short; culms (1° high) slender, acute-angled, longer than the smooth narrow leaves. — South Carolina (*Ravenel*), Mississippi (*Tracey*). Probably introduced.

3. *Umbel compound or decompound, diffuse: spikelets 2-ranked, compressed, many-flowered,* 3 – 10 *in a cluster at the summit of the general and partial rays: scales closely imbricated,* 3 – 7-*nerved, decurrent on the rachis: stamens* 3.

* *Culms terete, knotted, leafless: involucre very short: nut oblong.*

21. **C. articulatus,** L. Umbel compound, many-rayed, spreading or recurved; involucre of three bract-like pungent leaves; spikelets long (½′ – 1½′ long), linear, spreading, 30 – 40-flowered; scales whitish, oblong, obtuse, 7-nerved on the back, thrice the length of the linear-oblong dull nut; rhizoma creeping, bearing tuber-like buds; culms stout (3° – 5° high), tumid at the sheathed base. — Marshes near the coast, Florida to South Carolina. August – Sept. ♃ — Flowers mostly abortive.

* * *Culms* 3-*angled, knotless: involucre leafy: nut obovate.*

22. **C. Haspan,** L. Umbel many-rayed, decompound, spreading, the filiform rays mostly longer than the 2-leaved involucre; spikelets small (4″ – 5″ long), 3 – 5 in a cluster, linear, acute, 20 – 40-flowered; scales light reddish brown, very small, oblong, mucronate, 3-nerved, free at the apex; nut white, granular-roughened; culms tender, sharply angled; leaves linear, smooth, shorter than the culms (1° – 1½°), often reduced to membranaceous sheaths. — Ponds and ditches. July – Sept.

23. **C. dentatus,** Torr. Umbel compound, erect, 4 – 7-rayed, shorter than the 3 – 4-leaved involucre; spikelets 3 – 5 in a cluster (3″ – 7″ long), ovate-oblong, obtuse, flat, 12 – 30-flowered; scales ovate, acute, compressed, 7-nerved on the green keel, membranaceous on the reddish brown sides, spreading at the apex; nut minute, whitish; rhizoma creeping, bearing tubers; culms slender (1° high), obtuse-angled, longer than the rigid keeled leaves. — Sandy swamps and banks, South Carolina (*Torrey*), and northward. Sept. ♃ — Rays 1′ – 2′ long.

24. **C. Lecontei,** Torr. Umbel compound, erect, 6 – 12-rayed, shorter than the 3-leaved involucre; spikelets commonly three in a cluster, oblong or linear-oblong, obtuse, flat, 30 – 70-flowered (⅓′ – 1′ long); scales closely imbricated, ovate, obtuse, compressed, yellowish, faintly 7-nerved, appressed at the apex; nut minute, blackish; culms rigid, obtuse-angled, as long as the rigid leaves. — Low sandy places along the coast, East and West Florida. July – Sept. ♃ — Rhizoma creeping. Culms 6′ – 12′ high. Rays 2′ – 6′ long. Rachis with very short joints. Whole plant pale straw-color.

4. *Umbel simple or compound: spikelets many-flowered, compressed, numerous in a cluster, forming more or less dense heads at the summit of the common and partial rays: rachis wingless: stamen solitary.*

* *Umbel compound: spikelets ovate or oblong, flat: scales* 3-*nerved, concave on the back, acute: nut minute, lanceolate or oblong.*

25. **C. virens,** Michx. Umbel spreading, compound, many-rayed; involucre 4 – 6-leaved, many times longer than the umbel; spikelets (4″ – 6″ long, and about 20 in a cluster) oblong, 30 – 40-flowered, pale green; scales oblong-lanceolate, straight; nut lanceolate, acute at each end; culms stout (2° – 4°

high), rough-angled above; leaves broad, elongated, reticulated. Miry places, Florida to North Carolina. July – Sept. ♃ — Plant pale green. Rays 3′ – 4′ long. Spikelets turning yellowish.

26. **C. calcaratus,** Nees. Umbel often decompound, many-rayed, widely spreading; involucre 4-leaved, many times longer than the umbel; spikelets short (1½″ – 2″ long), ovate, 10 – 15-flowered, very numerous in the heads; scales lanceolate, incurved, spreading at the apex; nut minute, linear-lanceolate, slender-pointed; culms slender (2° – 3° high), obtuse-angled or nearly terete; leaves narrow, rigid, rough on the margins near the summit. — Low pine barrens and margins of ponds, Florida to North Carolina. Sept. ♃ — Culms tumid at the base. Leaves of the involucre horizontal. Heads light brown.

27. **C. Surinamensis,** Rottb. Umbel compound, of 4 – 6 primary rays, and as many smaller ones, shorter than the 4-leaved involucre; spikelets (10 – 20 in a cluster) oblong or oblong-linear, 40 – 50-flowered; scales yellowish, ovate, straight, free at the apex; nut oblong, pointed, abruptly contracted at the base, minutely wrinkled; culms (6′ – 15′ high) obtuse-angled, very rough, longer than the narrow leaves. — Sandy swamps, Middle Florida, and westward. Sept. ①.

* * *Umbel simple or sessile: spikelets lanceolate or linear, compressed: scales 8 – 10-nerved, tapering into a long spreading or recurved point: nut obovate-oblong: low tufted annuals.*

28. **C. aristatus,** Rottb. Umbel of 1 – 2 short rays or sessile, much shorter than the 2 – 3-leaved involucre; spikelets very numerous in the clusters (green), oblong-linear (2″ long), 10 – 20-flowered; scales thin, oblong, 8-nerved, gradually pointed; culms weak, acute-angled (2′ – 6′ high), as long as the smooth narrowly linear leaves. — Low sandy places (apparently introduced). July – Sept. — Sheaths of the leaves green.

Var. **versicolor,** Clarke. Spikelets 8 – 20 in a cluster, reddish brown; scales rigid, 10-nerved, abruptly pointed; sheaths dark brown. — South Florida.

29. **C. acuminatus,** Torr. Spikelets (whitish) numerous in a compact cluster, oblong, compressed, 20 – 30-flowered; scales thin, keeled, oblong, tapering into a spreading point, faintly 3-nerved; nut minute, narrowly obovate; culms clustered; leaves one or two, very narrow, like the 3-leaved involucre. — Low ground, Tennessee, and westward. — Culms 4′ – 8′ high.

5. *Umbel simple or sessile: spikelets inserted on all sides of the common rachis, forming clusters or heads: joints of the rachis mostly winged: scales rigid, 5 – 11-nerved: stamens 3.*

* *Spikelets few in loose clusters.*

30. **C. filiformis,** Swartz. Clusters sessile; spikelets 6 – 12, erect, terete, subulate, 6 – 12-flowered; scales scattered, appressed, oblong, mucronate, finely nerved; rachis very slender, flexuous; nut oblong, acute; culms tufted, filiform, acute-angled, longer than the bristle-like leaves; involucre 2-leaved, the lower one elongated and erect. — Key West. Nov. ♃ — Culms 4′ – 10″ high, tumid at the base. Spikelets 4″ – 6″ long.

31. **C. compressus,** L. Umbel simple or compound, often sessile, shorter than the 4 – 6-leaved involucre; spikelets spreading, linear, flat, 12 – 30-flowered; scales ovate, acuminate, closely imbricated, keeled; nut broadly obovate, acute-angled, black and shining; culms obtuse-angled, longer than the pale green leaves. — Cultivated grounds. July – Sept. ① — Culms 4′ – 12′ high. Umbel spreading, sometimes reduced to few spikelets or a single one. Spikelets somewhat glaucous, 4″ – 6″ long, serrated by the projecting points of the scales.

32. **C. viscosus,** Ait. Umbel simple, of 3 – 5 short erect rays; involucre elongated, 3-leaved; spikelets several in a cluster, lanceolate, compressed, 12 – 20-flowered; scales whitish, ovate, acuminate, loosely imbricated in fruit, hispid-serrulate on the keel, the broad margins embracing the pear-shaped acutely angled nut; culm flattened on one side, rounded on the other, as long as the slender keeled leaves. — Dry sandy soil, South Florida. May – Nov. — Culms 9′ – 15′ high, straw-color, like the leaves. Spikelets ½′ long.

* * *Spikelets numerous in compact globular oblong or cylindrical heads.*

33. **C. fuligineus,** Chapm. Head solitary, globose, shorter than the 2-leaved involucre; spikes lanceolate, acute, compressed, 8 – 12-flowered; scales (black) ovate, obtuse or emarginate, mucronate; nut oblong-obovate; culms filiform, obtuse-angled, thrice the length of the narrow rigid leaves. — Key West. Nov. — Culms ½° – 1° high. Sheaths of the leaves blackish. Head 5″ in diameter. Scales 9-nerved.

34. **C. filiculmis,** Vahl. Umbel of 1 – 2 spreading rays or none; involucre 3 – 4-leaved; spikelets 15 - 20, in a dense globose head, linear-lanceolate, 6 – 10-flowered; joints of the rachis barely margined; scales (greenish) ovate, obtuse or emarginate, short-mucronate, loosely imbricated; nut obovate; culms (10′ – 15′ high), slender, wiry, longer than the linear leaves. — Dry sandy soil. July – Sept. — Heads ½′ in diameter.

35. **C. Martindalei,** Britton. Allied to the preceding, but taller (1½° – 2° high); umbel 2 – 8-rayed, spikelets compressed, acute; scales closely imbricated; rachis winged. — Dry pine barrens near the coast, West Florida.

36. **C. Grayii,** Torr. Umbel of 4 – 6 erect rays, shorter than the 3 – 4-leaved involucre; spikelets 6 – 9 in a rather loose head, linear or linear-lanceolate, 5 – 7-flowered; joints of the rachis winged; scales (brownish) closely imbricated (spreading in fruit), ovate or oblong, obtuse; nut obovate; culms (8′ – 12′ high) filiform, wiry, longer than the bristle-shaped leaves. — Dry sandy pine barrens, North Carolina (*Curtis*), and northward. August – Sept.

37. **C. ovularis,** Torr. Umbel 3 – 6-rayed, rarely wanting; heads small, globose or oblong; spikelets (1½″ – 2″ long) angular, obtuse, 2–4-flowered; scales ovate-oblong, obtuse, mucronate, closely imbricated; nut oblong; culms smooth, rather acute-angled, mostly longer than the leaves. — Wet or dry soil, common and variable. August – Sept. — Culms ½° – 2° high. Heads 2″ – 3″ in diameter.

38. **C. retrofractus,** Torr. Umbel of about 8 slender (2′ – 6′ long) rays, longer than the involucre; heads obovate; spikelets subulate, reflexed-

terete; scales 4 – 5, the two lower ones ovate and empty, the upper lanceolate, acute; nut linear-oblong; culm tall (2° – 4°), downy and roughish, like the broadly linear leaves. — Barren sandy soil, Florida, and northward. July – Sept. — Leaves much shorter than the culm.

39. **C. retrorsus,** Chapm. Umbel simple, 8-rayed; spikes clavate-obovate; spikelets lanceolate, acute, reflexed, 2 – 3-flowered, the lowest flower fertile; scales oblong, 7-nerved, scarcely longer than the oblong triangular nut; rachis very slender, broadly winged; culm smooth (2° high); leaves linear, involucre longer than the umbel. — Roberts's Key, Caximbas Bay, South Florida.

40. **C. Baldwinii,** Torr. Umbel 6 – 12-rayed, shorter than the involucre; heads globose or oblong; spikelets linear, somewhat compressed, acute, 6 – 12-flowered; scales (greenish or yellowish) oblong, obtuse, mucronate, closely imbricated; nut oblong; culms (1° – 2° high) obtuse-angled, longer than the linear leaves. (Mariscus echinatus, *Ell.*) — Cultivated ground, Florida to North Carolina, and westward. July – Sept. — Spikelets 3″ – 6″ long.

41. **C. Lancastriensis,** T. C. Porter. Culms triangular (1° – 2° high); leaves rather broadly linear; umbel 6 – 9-rayed; spikelets subulate, numerous in an oval or globular head, soon reflexed, 3 – 6-flowered; scales oblong, obtuse, twice the length of the linear-oblong nut; rachis broadly winged. — Alabama (*Porter*), and northward.

42. **C. cylindricus,** Chapm. Umbel 3 – 6-rayed, simple, erect; heads oblong or cylindrical; spikelets very numerous, lanceolate, 7 – 9-flowered; scales oblong, 7 – 9-nerved, pale, twice the length of the oblong triangular nut; rachis very slender, narrowly winged; culms (1° – 2° high) triangular, smooth; leaves broadly linear, as long as the culm. — Sandy keys of Caximbas Bay, South Florida.

43. **C. Blodgettii,** Britton? Umbel 3 – 5-rayed, simple, longer than the 3-leaved involucre; heads globose, dense, 3″ – 4″ in diameter; spikelets 6 – 8-flowered; scales oval, obtuse, little longer than the ovate-oblong triangular nut; rachis strongly winged; culms 6′ – 12′ high, much longer than the smooth linear leaves. — Keys of Caximbas Bay, South Florida.

2. KYLLINGIA, L.

Spikelets compressed, mostly 1-flowered. Scales commonly 4, imbricated in two rows, the two lower ones small and empty, the third perfect, the fourth imperfect. Perianth none. Stamens 1 – 3. Style elongated, 2-cleft. Nut lenticular. — Culms jointless, 3-angled, leafy at the base. Involucre 3 – 5-leaved. Spikelets collected in single or clustered sessile heads. Plants odorous.

1. **K. pumila,** Michx. Heads (green) mostly 3, globose or ovate; spikelets 1-flowered, ovate-lanceolate, acute at each end; scales 3, the lowest minute, the middle one ovate, compressed, mucronate, mostly serrulate on the keel, enclosing the upper one; nut obovate; stamens 2; culms weak, acute-angled; leaves and 3 – 4-leaved involucre linear. — Wet places, Florida to North Carolina. July – Sept. ① — Culms tufted, 4′ – 10′ high.

2. **K. odorata,** Vahl. Heads (white) 1 – 3, ovate or oblong; spikelets ovate-oblong, acute, 1-flowered, or imperfectly 2-flowered; scales 4 – 5, the two lower ones minute, the third and fourth alike, ovate, acute, smooth, the fifth enclosed in the fourth; stamens 2; nut obovate; culms erect, obtuse-angled; leaves and 3 – 5-leaved involucre broadly linear. — Low exposed places and along roads, Middle Florida. August – Sept. ♃ — Culms 4′ – 12′ high. Plant pale green, pleasant-scented.

3. **K. monocephala,** L. "Heads single, globose, compact; spikelets 1-flowered, monandrous, ovate, acuminate, the 2 superior scales striate, nearly smooth on the sides, serrulate-ciliate on the keel, the two inferior minute; nut somewhat orbicular; involucre 3-leaved, one of the leaves erect, the others horizontal." *Torr.* — Low moist places near the coast, Georgia and Florida. — Rhizoma creeping. Culms 1° high. Head greenish, generally inclined. Leaves abruptly pointed.

3. DULICHIUM, Richard.

Spikelets linear, compressed, many-flowered. Scales imbricated in 2 rows, decurrent on the joints of the rachis. Perianth composed of 6 – 9 downwardly hispid rigid bristles. Stamens 3. Style 2-cleft. Nut lanceolate, compressed, long-beaked. — Perennial. Culms terete, jointed, leafy. Leaves numerous, 3-ranked, linear or lanceolate, short and spreading. Spikes numerous, solitary in the upper axils, simple or the lower compound. Spikelets 8 – 14, 2-ranked, spreading, 6 – 10-flowered. Scales lanceolate, many-nerved, closely imbricated. Bristles nearly twice as long as the compressed or concave nut.

1. **D. spathaceum,** Richard. — Ponds and ditches, Florida, and northward. August – Sept. — Culms 1° – 2° high. Leaves 1′ – 3′ long. Spikelets 6″ – 12″ long. Peduncles of the lower spikes longer than the sheaths.

4. HEMICARPHA, Nees.

Spikes many-flowered, ovate, one or few in a terminal (apparently lateral) cluster. Scales imbricated in many rows, ovate or obovate. Inner scale single, behind the flower, very thin, minute. Perianth none. Stamens 1 – 2. Style 2-cleft. — Small tufted annuals with naked culms, narrow radical leaves, and an erect mostly 1-leaved involucre.

1. **H. subsquarrosa,** Nees. Culms nearly terete (2′ – 4′ high); leaf solitary, shorter than the culm; involucre 1 – 2-leaved, the lower erect, the other short and reflexed or wanting; spikes 2 (rarely one); scales brown, ovate-oblong, acuminate; stamens 2; style deeply 2 parted, smooth; nut oblong-obovate, minutely pitted in lines. — Low sandy places, Florida, and northward. August – Sept. — Sheaths brown. Spikes 2″ – 3″ long.

5. LIPOCARPHA, R. Br.

Spikes many-flowered, terete. Scales spatulate, imbricated in many rows, deciduous, the lowest empty. Interior scales 2, parallel to the exterior ones, membranaceous, enclosing the flower and nut. Stamens 1 – 2. Style 2 – 3-

cleft. Nut compressed, 3-angled. — Culms jointless, leafy at the base. Spikes in a terminal cluster. Involucre leafy.

1. **L. maculata,** Torr. Annual; culms clustered, terete; leaves much shorter than the culm, linear, concave, smooth; involucre 2 – 6-leaved, spreading or recurved; spikes small, ovate, 3 – 9 in a cluster; scales spotted; scales of the perianth very thin, the nerves at length free and bristle-like below; nut oblong, contracted into a short neck. — Springy or miry places, Florida to North Carolina. July – Sept. — Culms 4′ – 8′ high. Spikes 1″ – 2″ long, green.

6. FUIRENA, Rottb.

Spikes many-flowered. Scales imbricated in many rows, awned at the apex. Perianth consisting of three petal-like stalked scales alternating with as many bristles. Stamens 3. Style 3-cleft. Nut 3-angled, raised on a stalk, and pointed with the persistent base of the style. — Culms terete, jointed. Spikes single or clustered, lateral and terminal. Scales hairy.

1. **F. scirpoidea,** Vahl. Rhizoma thick and creeping; culms slender; leaves reduced to pointed sheaths, smooth; spikes 1 – 3, terminal, ovate, supported by a small bract-like involucre; scales obovate, 9-nerved, pointed with a short erect awn; stalks of the oval barely pointed petal-like scales longer than the hispid bristles. — Wet sandy places near the coast, Florida and Georgia. May – Sept. ♃ — Culms 1° high.

2. **F. longa,** Chapm. Glabrous; culms weak, declining, 2° – 4° long; lower sheaths leafless, the upper short-leaved; umbel terminal, sessile; spikes 2 – 4 in a cluster, oblong-ovate; scales hairy, obovate, awned; petal-like scales ovate, barely longer than their stalks; bristles slightly hispid; nut acutely triangular, pointed. — Low pine barrens near the coast, West Florida.

3. **F. squarrosa,** Michx. Culms clustered, smooth, or pubescent near the summit; leaves flat, linear or linear-lanceolate, the margins, like the lower sheaths, hairy; spikes oblong, in lateral and terminal clusters; scales oblong-obovate, with the long pale awn recurved; petal-like scales ovate, acute; bristles as long as the stalk of the obovate nut. — Var. HISPIDA. (F. hispida, *Ell.*) Leaves, sheaths, and upper portion of the culm bristly-hairy; petal-like scales acuminate; bristles nearly as long as the nut. — Swamps, Florida, and northward. July – Sept. ♃ — Culms ½° – 2° high. Leaves 2′ – 5′ long. Terminal cluster occasionally compound.

7. ELEOCHARIS, R. Br. SPIKE RUSH.

Spikes many- (rarely 2 – 4-) flowered. Scales imbricated on all sides of the rachis, or somewhat 2-ranked, the lowest usually empty, bract-like, and persistent. Perianth of 3 – 8 bearded bristles, occasionally wanting. Stamens 1 – 3. Style 2 – 3-cleft. Nut compressed, biconvex, or 3-angled, crowned with the persistent jointed base of the style (tubercled). — Commonly perennials, with creeping rootstocks. Culms jointless, leafless, sheathed at the base, bearing at the apex a single spike.

§ 1. ELEOCHARIS proper. — *Spikes many-flowered: scales imbricated in several rows.*

∗ *Spikes cylindrical, scarcely thicker than the soft cellular culms: nut biconvex, pitted or wrinkled in longitudinal lines.*

+- *Scales rounded, thick and faintly nerved: style 3-cleft: bristles 6, sparingly bearded or smoothish, as long as the nut.* (Limnochloa, Nees.)

1. **E. equisetoides,** Torr. Culms stout, terete, knotted by cross partitions, roughish; scales pale, round-ovate, obtuse or the upper acute, scarious on the margins; bristles hispid; nut pale brown, obscurely wrinkled, shining, crowned with a sessile conical-beaked acute tubercle. (Scirpus equisetoides, *Ell.*) — Ponds, Florida, and northward. July - Sept. ♃ — Culms 1° - 2° high, 3″ in diameter. Sheaths brown. Spikes 1′ long.

2. **E. quadrangulata,** R. Br. Culms unequally 4-sided, with the angles acute; scales pale, roundish, very obtuse, scarious on the margins; bristles slender, bearded, unequal; nut broadly obovate, finely pitted, dull white; tubercle ovate or conical, free around the base, much shorter than the nut. — Ponds and ditches, Florida, and northward. July - Sept. ♃ — Culm 2° - 3° high, 1″ - 2″ in diameter. Sheaths purplish. Spikes 1′ long.

3. **E. cellulosa,** Torr. Culms obscurely 3-angled below, terete above; scales pale brown, round-obovate, white and scarious on the margins; bristles rather rigid, nearly or quite smooth; nut oblong-obovate, conspicuously pitted, narrowed into the conical (at length flattened) tubercle. — Marshes, Florida, and westward, near the coast. August — Sept. ♃ — Rootstocks creeping, slender. Culms 1° - 2° high, 1½″ in diameter. Upper sheath elongated. Spikes ½′ - 1′ long, spirally twisted.

+- +- *Scales oblong, nerved on the back, thin on the margins: style 2 - 3-cleft: bristles 7, strongly bearded, longer than the nut.*

4. **E. Robbinsii,** Oakes. Culms erect, rather slender, acutely 3-angled, intermixed with hair-like abortive ones; spike 6 - 8-flowered, acute; scales greenish, obtuse, rather distant on the flattened rachis, closely imbricated; style 2-cleft; bristles unequal, as long as the nut and tubercle; nut (1″ long) deeply pitted in lines, scarcely shorter than the subulate tubercle. — Shallow ponds, near Quincy, Florida, and northward. August. — Rhizoma filiform. Culms 6′ - 12′ high. Spikes ½′ long.

5. **E. elongata,** Chapm. Culms floating, slender, terete, mingled with hair-like abortive ones; spike 12 - 20-flowered, acute; scales rather distant on the compressed rachis, oblong-ovate, obtuse, green on the back, dark brown on the sides; style 3-parted; bristles rather longer than the obovate biconvex or somewhat 3-angled faintly pitted nut; tubercle minute. — In still water, Florida. July. ♃ — Rootstocks filiform. Culms 2° - 3° long, all but the summit immersed. Spikes 6″ - 9″ long. Nut ½″ long.

∗ ∗ *Spikes thicker than the culm: style 3-cleft: nut 3-angled.*

+- *Bristles 6, as long as the nut and tubercle: nut longitudinally furrowed and pitted.*

6. **E. tuberculosa,** R. Br. Culms somewhat compressed, tough and wiry; spikes pale, ovate or oblong, acute; scales oblong, rigid, 1-nerved; nut

obovate, as large as the ovate compressed 3-angled tubercle; bristles rigid, hispid. — Varies with larger spikes and pubescent bristles. — Wet places, chiefly along the coast, Florida, and northward. March – Sept. ♃ — Culms 6′ – 12′ high. Spikes 3″ – 4″ long (6″ – 8″ in the var.). Nut shining.

7. **E. tortilis,** Schultes. Culms unequally 3-sided, acute-angled; spikes short, ovate, acute; scales ovate-oblong, whitish, with brownish sides; nut obovate, flat on the inner face, twice as long as the conical-beaked compressed acute tubercle; bristles rigid. (Scirpus simplex, *Ell.*) — Miry places along streams, Florida to North Carolina. May – Sept. ♃ — Culms 1° – 1½° high, very slender, twisted when dry. Spikes 2″ - 3″ long, angular, few-flowered.

8. **E. prolifera,** Torr. Culms filiform, diffuse or floating, compressed; spikes ovate-lanceolate, acute, proliferous or rooting; scales whitish, thin, oval, obtuse; nut obovate, compressed-3-angled; tubercle half as long as the nut, conical, 3-angled, free at the base; bristles stout. — Marshy borders of ponds and streams, Florida to North Carolina. May – Sept. ♃ — Culms 10′ – 20′ long, tough and wiry. Spikes 2″ – 4″ long, very rarely fruiting.

+ + *Bristles* 4 – 6, *longer than the smooth nut.*

9. **E. intermedia,** Torr. Culms bristle-form, diffuse, furrowed; spikes oblong-ovate, acute, 8 – 10-flowered; scales ovate-lanceolate, rather acute, thin, brown on the sides; nut (yellowish) obovate, narrowed at the base, flat on the inner face, backed with the subulate tubercle; bristles 6, stout, as long as the nut and tubercle. — Wet places and in shallow streams, Georgia, and northward. — Culms ½° long. Spikes 2″ - 3″ long. Nut minutely striate.

10. **E. albida,** Torr. Culms terete, spongy; spikes pale, oval or oblong, obtuse, many-flowered; scales rigid, oval, obtuse, white or brownish; nut broadly obovate, whitish, flat on the inner face, smooth and shining; tubercle minute, free at the base; bristles 6, reddish, longer than the nut. — Wet sandy places along the coast. May – Sept. ♃ — Rhizoma filiform, creeping. Culms 2′ – 6′ high. Spikes 2″ – 3″ long.

11. **E. rostellata,** Torr. Culms compressed, furrowed, wiry; spikes ovate-lanceolate, acute, 12 – 20-flowered; scales rigid, oval, obtuse, light brown; nut obovate, flat on the inner face, tapering into the conical beaked tubercle; bristles 4 – 6, stout, twice as long as the nut. — South Carolina, and northward. — Culms 1° – 1½° high. Spikes 3″ – 4″ long.

+ + + *Bristles* 2 – 6, *not exceeding the nut, often wanting.*

12. **E. melanocarpa,** Torr. Culms compressed, furrowed, tough and wiry; spikes ovate or ovate-oblong, obtuse, many-flowered; scales thin, ovate, obtuse, white on the broad margins; style 2 – 3-cleft; nut black, obconical, 3-angled or biconvex, truncate at the apex, and capped with the triangular minutely pointed white tubercle; bristles 3, as long as the nut, sometimes wanting. — Pine barren swamps, Florida, and northward. June – Sept. ♃ — Culms 1° - 1½° high. Spikes 4″ - 5″ long, 2″ thick, occasionally proliferous.

13. **E. arenicola,** Torr. Rhizoma long and creeping; culms slender slightly compressed, striate, tough and wiry; spikes ovate, or at length oblong or cylindrical, obtuse, many-flowered; scales thin, oblong, obtuse, brown at the summit, white on the margins; nut (yellowish) obovate, compressed-3-

angled, contracted into a neck at the base of the short conical-beaked tubercle; bristles 4 – 6, reddish, not longer than the nut. — Sandy sea-shore, West Florida to South Carolina. May – Sept. ♃ — Rhizoma and sheaths black. Culms 6′ – 15′ high. Spikes 3″ – 6″ long, occasionally 2 – 3-cleft. Nut minutely pitted.

14. **E. tricostata,** Torr. Rhizoma stout, creeping; culms nearly terete, striate, wiry; spikes cylindrical-oblong, acutish, many-flowered; scales thin, oblong, green on the keel, dark brown on the sides, white on the margins; nut obovate, with strong and rib-like angles, contracted into the minute conical tubercle; bristles none. — Low pine barrens, Florida, and northward. May – Sept. ♃ — Rhizoma and sheaths pale. Culms 1° – 1½° high. Spikes 2″ – 4″ long. Nut very small, minutely wrinkled.

15. **E. tenuis,** Schultes. Culms filiform, acutely 4-angled, the sheaths purple; spikes elliptical, obtuse or acute, many-flowered; scales oblong, obtuse, green on the keel, dark brown on the sides, white on the margins; nut obovate, 3-angled, transversely wrinkled and pitted, crowned with the broad depressed short-pointed tubercle; bristles 2 – 3, much shorter than the nut, fugacious. — Wet places, chiefly in the upper districts. — Culms 8′ – 12′ high, almost bristle form. Spikes 3″ – 4″ long. Nut pale brown.

16. **E. microcarpa,** Torr. Culms bristle- or hair-like, 4-angled; spikes ovate or oblong, obtuse, 10 – many-flowered, often proliferous; scales oblong, obtuse or acutish, membranaceous, brownish, with white margins; nut very minute, white, obovate, rounded at the apex, and crowned with the depressed minutely pointed tubercle; bristles 3 – 6, rarely as long as the nut, occasionally wanting. — Wet sandy places, Florida to North Carolina, and westward.

17. **E. Torreyana,** Bœckl. Spikes many-flowered, dark brown; nut obovate, oblong, narrowed at the apex, and crowned with the conical 3-angled tubercle; bristles rigid, rather longer than the nut. — Low sandy places, Florida, and northward, chiefly near the coast. May – Sept. — Culms tufted, 3′ – 9′ high. Spikes 1″ – 2″ long. Lowest scale larger and persistent. Nut strongly 3-angled.

* * * *Spikes thicker than the culm: style 2 – 3-cleft: nut lenticular.*

+ *Culms 4-angled, bristle-like.*

18. **E. bicolor,** Chapm. Culms erect or procumbent, 4-angled or 4-furrowed; spikes ovate, obtuse, 8 – 12-flowered; scales thin, loosely imbricated, ovate, obtuse, white on the keel and margins, the sides dark brown; style 2 – 3-cleft; nut very minute, white, obovate, lenticular, smooth, twice as long as the three fugacious bristles; tubercle broadly conical, compressed, one third as long as the nut. — Sandy margins of ponds, near Quincy, Florida. August. ① — Culms tufted, 1′ – 6′ long, when growing in water finely knotted. Spikes 1½″ long.

19. **E. atropurpurea,** Kunth? Culms tufted, erect, 4-furrowed, the sheaths dark brown; spikes ovate or oblong, obtuse, at length very many- (70 – 100-) flowered; scales oval, very obtuse, thin, brown on the sides, white on the margins; stamens 2; style 2-cleft; nut very minute, pear-shaped, compressed, almost truncate at the apex, tipped with the somewhat peltate tuber-

cle; bristles none. — Margins of ponds and streams, Florida, and westward. June – August. ① — Culms 3′ – 5′ high. Spikes 1″ – 2″ long, the lower scales deciduous as new flowers are developed. Nut black, smooth and shining.

+ + *Culms terete or compressed, more or less spongy.*

20. **E. capitata,** R. Br. Culms tufted, nearly terete; spikes globose-ovate, closely many-flowered; scales chartaceous, oval, pale, or brown near the rounded summit; nut black, smooth and shining, broadly obovate, biconvex, rather shorter than the stout bristles; tubercle white, depressed, apiculate. — Low ground near the coast, Georgia, and westward. — Culms 4′ – 6 high. Spikes 2″ long.

21. **E. ochreata,** Nees. Rhizoma slender, creeping; culms compressed; spikes short, ovate, 4 – 16-flowered; scales membranaceous, whitish, oblong, obtuse, deciduous; nut black and shining, broadly obovate, biconvex, tipped with the short conical tubercle; bristles 6, as long as the nut. — Springy or miry places, South Carolina, and westward. June – Sept. ♃ — Culms 1′ – 4′ high. Spikes 1″ – 2″ long. Scales often brown when young. Nut very small.

22. **E. olivacea,** Torr. Culms compressed, furrowed, diffuse; spikes ovate, acutish, many-flowered; scales ovate, obtuse, thin, purplish on the sides, green on the keel, the margins white; nut obovate, dull, dark olive; tubercle distinct, conical-beaked; bristles 6 – 8, about as long as the nut. — Wet sandy places, Florida, and northward. August – Sept. — Culms 2′ – 5′ long. Spikes 3″ long, 20 – 30-flowered.

23. **E. palustris,** R. Br. Rhizoma creeping; culms slender, terete, striate; spikes oblong-lanceolate, mostly acute, many-flowered; scales oblong, membranaceous, brown on the sides, at length whitish, the upper ones acute; nut dull yellow, obovate, tumid, minutely dotted; tubercle short, triangular-ovate, compressed; bristles 4, slender, commonly as long as the nut. — Marshes and wet places, Florida, and northward. June – Sept. ♃ — Rhizoma black. Culms 1° – 3° long. Spikes 3″ – 5″ long.

24. **E. obtusa,** Schultes. Culms tufted, terete, thick and spongy; spikes ovate or oblong, obtuse, many-flowered; scales thin, oblong, obtuse, commonly brown on the sides, green on the keel, with broad and white margins; style 2 – 3-cleft; nut (light brown) obovate, lenticular, smooth and shining, scarcely wider than the short compressed acute tubercle; bristles 6, rigid, twice the length of the nut. (E. Engelmannii, *Steudl.*, spikes cylindrical, 4″ – 6″ long; bristles shorter.) — Muddy margins of ponds and streams. Common and variable. June – Sept. — Culms 6′ – 18′ high. Spikes 2′ – 4′ long.

25. **E. compressa,** Sulliv. Culms flat, from a creeping rootstock (1° – 2° high); spikes ovate-oblong, many-flowered; scales oblong, acute, dark purple, the margins white; nut obovate, compressed, the small tubercle acute; bristles 1 – 4, very slender, about the length of the nut, often wanting. — Wet places, mountains of Georgia, Tennessee, and northward.

§ 2. Chætocyperus. — *Spikes few-flowered, compressed: scales membranaceous, imbricated in 2 – 3 rows: style 3-cleft. Culms capillary.*

26 **E. acicularis,** R. Br. Culms (2′ 12′ high) angled; spikes ovate, 5 – 6-flowered acute; scales oblong, with reddish sides; nut oblong, white,

nearly terete, longitudinally ribbed and pitted, pointed with the conical or depressed tubercle; bristles 3 – 4, shorter than the nut, sometimes wanting. — Margins of ponds, Florida, and northward. June – Sept.

27. **E. pygmæa,** Torr. Culms short (1′ – 2′ high), grooved on one side; spikes-ovate, 3 – 6-flowered; scales whitish, ovate; nut ovate, pale, prominently 3-angled, smooth and shining, narrowed above into the minute tubercle; bristles 6, longer than the nut, sometimes wanting. — Muddy or sandy banks near the coast, Florida, and northward. April – July. — Rhizoma very slender, bearing minute tuber-like buds. Spikes 1″ – 2″ long.

28. **E. Baldwinii,** Torr. Culms (4′ – 6′ long) grooved, diffuse, wiry; spikes oblong, flat, 3 – 5-flowered, proliferous and rooting; scales 4 – 6, 2-ranked, lanceolate, obtuse, finely nerved, the lower ones longer; nut smooth, oblong, strongly 3-angled, crowned with the conical 3-angled sessile tubercle; bristles 4 – 6, unequal, the longest as long as the nut. — Swamps, Florida and Georgia. June – Sept. ♃ — Sheaths light brown. Spikes 2″ long.

8. SCIRPUS, L. Bulrush.

Spikes terete, single, or oftener in clusters or umbels, which are subtended by a 1 – many-leaved involucre Scales imbricated in several rows. Nut obtuse, or pointed by the persistent jointless base of the style. Tubercle none. — Culms jointed and leafy, or leafy or sheathed only at the base. Otherwise like Eleocharis. — All perennial except No. 2.

§ 1. *Culms jointless: leaves or sheaths radical.*

* *Spike solitary, terminal.*

1. **S. cæspitosus,** L. Culm tufted (6′ – 10′ high), terete, wiry; sheaths numerous, rigid, imbricated, the uppermost ending in a short leaf; spike 3 – 8-flowered; involucre 2-leaved, as long as the spike, pointed; nut oblong, compressed-3-angled, abruptly pointed, half as long as the smooth capillary bristles. — High mountains of North Carolina, and northward. July. — Rhizoma thick and creeping. Spike 1″ – 2″ long.

* * *Spikes 2 – many, apparently lateral: the 1-leaved involucre erect and continuous with the culm.*

+ *Spikes in sessile clusters.*

2. **S. debilis,** Pursh. Culm terete, slender, commonly leafless; spikes 2 – 5, oblong-ovate or cylindrical; involucre elongated; scales round-ovate, obtuse, mucronate; style 2 – 3-cleft; nut broadly obovate, plano-convex, smooth, shorter than the 4 – 6 strongly hispid bristles. — Borders of ponds and streams, South Carolina, and northward. ① — Culms ½° – 1½° high. Spikes 3″ – 5″ long.

3. **S. pungens,** Vahl. Culm stout, acutely 3-angled, two of the sides concave, leafy at the base; leaves channelled, sharply keeled; involucre slender (3′ – 4′ long); spikes 3 – 6, light brown, oblong; scales membranaceous, oval, 2-cleft, mucronate-awned, slightly ciliate; anthers slender-pointed; style 2-cleft; nut round-obovate, plano-convex or lenticular, as long as the 3 – 5 hispid bristles. (S. Americanus, *Pers.*) — Sandy marshes along the coast, West

Florida, and northward. June - Sept. — Culm 2° - 3° high. Leaves 2 - 3, mostly shorter than the culm. Spikes 4″ - 6″ long.

4. **S. Olneyi,** Gray. Culm stout, with three-winged angles, and three deeply channelled sides, leafless, or the sheaths ending in short pointed leaves; involucre short (½′ - 1′ long), rigid; spikes 7 - 13, short, ovate, dark brown; scales smooth, orbicular, 2-cleft, mucronate; anthers obtuse; style 2-cleft; nut round-obovate, plano-convex, as long as the 6 hispid bristles. — Brackish marshes, West Florida, and northward. June - Sept. — Culm 2° - 4° high. Leaves 2′ - 4′ long. Spikes 2″ long.

+ + *Spikes umbelled.*

5. **S. lacustris,** L. Culm tall (3° - 8° high), terete, leafless, or the radical sheaths leafy-pointed; involucre 1-leaved, pungent, shorter than the decompound umbel; spikes ovate or oblong, mostly clustered; scales ovate, emarginate, rough-awned, ciliate on the margins, pubescent on the back and green keel; style 2-cleft; nut obovate, pointed, plano-convex, shorter than the 3 - 6 strongly hispid bristles. — Varies, with the broader keeled and fimbriate bristles rather shorter than the round-obovate nut. — Fresh or brackish marshes and ponds, Florida, and northward. July - Sept.

6. **S. leptolepis,** Chapm. Culms 3-angled, 2° - 3° high; leaves long, sharply keeled, triangular-compressed near the obtuse curved apex, the immersed ones flat and pellucid; involucre slender (7′ long), leaf-like, with shorter ones at the divisions of the compound umbel; spikes single, oblong or cylindrical, many-flowered, acute; scales light brown, lanceolate-oblong, acute, smooth, membranaceous, mucronate, and, like the three obtuse anthers, finely spotted; style 3-parted; nut whitish, 3-angled, oblong-obovate, long-pointed, shorter than the 5 slender and minutely denticulate bristles. (S. Canbyi, *Gray.*) — Lakes and ponds, Middle Florida, and westward. Sept.

§ 2. *Culms jointed, leafy throughout: umbel terminal: involucre 2 - several-leaved, spreading.*

* *Bristles hispid, downward.*

7. **S. maritimus,** L. Culm sharply 3-angled, rough above; leaves longer than the culm, keeled; umbel simple, 1 - 3-rayed, bearing single or 2 - 3 spikes in a cluster, or the spikes all clustered and sessile; involucre 2 - 4-leaved, much longer than the umbel; spikes large, ovate or oblong-ovate, dull brown; scales thin, ovate, pubescent, tipped with a spreading awn; nut round-obovate, plano-convex or lenticular, smooth and shining, twice the length of the 4 weak bristles. — Saline marshes, Florida, and northward. August - Sept. — Culm 2° - 3° high. Spikes 6″ - 10″ long, 4″ in diameter.

8. **S. polyphyllus,** Vahl. Culm obtuse-angled, smooth; leaves long, rough on the margins; umbel decompound, spreading; spikes small, 3 - 8 in a cluster, ovate, yellowish-brown; scales ovate, mucronate, keeled; bristles 6, slender, hispid near the summit, mostly tortuous, 2 - 3 times as long as the pale compressed-3-angled pointed nut. (S. exaltatus, *Pursh.*) — Shady swamps, North Carolina, and northward. July. — Culm 2° - 5° high. Spikes 1″ long.

9. **S. atrovirens,** Muhl. Culm 2° - 4° high, obtuse-angled; leaves pale, 6″ - 10″ wide; umbel erect; clusters of spikes closely packed in large greenish brown heads; scales oblong, pointed; bristles rather longer than the white compressed obovate pointed nut, naked below the middle. — Marshes and wet banks in the upper districts. July.

10. **S. divaricatus,** Ell. Culm round-angled, many-jointed; leaves flat, broadly linear; umbel large, widely spreading or drooping, decompound, longer than the 3-leaved involucre; spikes all single, oblong-linear, scattered; scales ovate, obtuse, 3-nerved, brown on the sides; bristles hair-like, rather roughened than hispid, crisped at the summit, longer than the obovate pointed equal-sided, acute-angled nut. — Muddy banks of the Chipola River, and of Flat Creek, near Aspalaga, Florida to South Carolina; not common. August. — Culm 2° - 4° high, often proliferous at the joints. Umbel 6′ - 12′ long. Spikes 2″ - 3″ long.

11. **S. (?) submersus,** Sauvalle. Culm floating, terete, sheathed; umbel large, decompound, leafy, the leaves short, capillary, clustered like the 1 flowered pedicelled spikes; scales two, linear, the lower empty; style 2-cleft; nut obovate, lenticular, puncticulate, pointed by the persistent base of the style, shorter than the 6 - 10 capillary bristles. (Websteria limnophila, *S. H Wright.*) — Lakes and ponds, Volusia County, Florida (*G. W. Webster*). — Culm 1° - 3° long. Leaves 1′ - 3′ long. Spikes 4″ - 6″ long.

* * *Bristles* 6, *capillary, smooth, crisped and entangled.* (Trichophorum.)

12. **S. Eriophorum,** Michx. Culm nearly terete, with the joints remote; leaves linear, elongated, keeled; umbel terminal, decompound, spreading or recurved, shorter than the 3 - 5-leaved involucre; spikes single or clustered, ovate; scales thin, lanceolate, obtuse; bristles many times longer than the oblong compressed-3-angled beak-pointed nut, at length exserted, and covering the spike with woolly down. — Swamps and low grounds, Florida, and northward. July - Sept. — Culm 2° - 4° high.

13. **S. lineatus,** Michx. Culm 3-angled; leaves flat, linear-lanceolate; umbels lateral and terminal, longer than the 1 - 3-leaved involucre; spikes all single, cylindrical; scales rigid, keeled, mucronate; bristles barely exserted; nut as in the preceding. Swamps, Georgia, and northward. June - August. — Culm 2° - 3° high. Spikelets 3″ - 4″ long.

§ 3. *Culms jointless: leaves radical: spikes capitate: involucre several-leaved.*

14. **S. Cubensis,** Poepp. & Kunth. Culm acutely 3-angular, leafy at base (8′ - 12′ high), shorter than the leaves and the involucre; spikes obovate, compressed, 12-flowered, closely packed in a terminal globular head; scales rigid, oblong-obovate, tapering into a stout spreading point, 13-nerved; stamens 3; style deeply 2-parted; nut ovate lanceolate, acuminate, concavo-convex; bristles none. — Marshes, New Orleans (*Dr. Hale*), Mobile (*Mohr*).

9. ERIOPHORUM, L. Cotton-Grass.

Spikes many-flowered. Scales imbricated in many rows. Perianth composed of numerous (rarely 6) smooth and flat hairs, much longer than the scale, and forming a woolly or silky tuft. Stamens commonly 3. Style 3-cleft, deciduous. Nut 3-angled or lenticular. — Perennials, with leafy culms, in our species, and clustered or umbelled spikes.

1. **E. Virginicum,** L. Culm nearly terete, rigid; leaves narrowly linear, elongated; spikes densely clustered, nearly sessile, erect; involucre 2–3-leaved; wool reddish, thrice the length of the brownish scales; nut compressed-3-angled, acute. — Bogs and swamps, Florida, and northward. June–August.— Culm 2°–3° high. Leaves 10′–18′ long.

2. **E. polystachyon,** L. Culm terete; leaves broadly linear, 3-angled at the summit; spikes umbelled, distinct, on slender at length nodding peduncles; involucre 2-leaved, shorter than the umbel; wool white, many times longer than the dark brown scales; nut obtuse. — Meadows and bogs in the upper districts, Georgia, and northward. August–Sept. — Culm 1°–2° high. Leaves 3′–6′ long.

10. FIMBRISTYLIS, Vahl.

Spikes many-flowered. Scales imbricated in several rows. Perianth none. Stamens 1–3. Style 2-cleft, commonly flat and fringed on the margins, tumid at the base, deciduous. Nut lenticular. — Culms jointless, leafy at the base. Involucre 1–several-leaved. Spikes terminal, umbellate or clustered.

* *Spikes umbelled.*

1. **F. spadicea,** Vahl. Perennial; culms clustered, nearly terete, rigid (2°–3° high); leaves long, linear or filiform, concave, rough on the margins; umbel simple or compound, erect; involucre 2–3-leaved; spikes ovate or oblong, dark brown; scales smooth, rigid, rounded; nut obovate, acute, slightly furrowed and pitted. — Salt marshes, Florida, and northward. August–Oct.
Var. **puberula.** (Scirpus puberulus, *Michx.*) Culms single, slender (1°–2° high); leaves filiform, involute, and, like the spikes, densely pubescent and somewhat hoary; nut round-obovate, obtuse. — Low pine barrens.

2. **F. laxa,** Vahl. Annual; culms (6′–18′ high) slender, and, like the narrowly linear leaves, often pubescent; umbel mostly simple; involucre 2–4-leaved; spikes oblong-ovate; scales orbicular, mucronate; nut obovate, strongly furrowed and pitted, warty on the edges. (Scirpus sulcatus, *Ell.*) — Low grounds, in fields and waste places, Florida to North Carolina. August–Sept. — Umbel occasionally reduced to a single spike.

* * *Spikes clustered, sessile.*

3. **F. Vahlii,** Link. Annual; culms densely tufted (3′–6′ high), bristle-like, like the rough leaves; spikes 5–10 in a terminal cluster, oblong or cylindrical, pale, or at length yellowish brown; involucre 4-leaved, erect-spreading, longer than the culm; scales lanceolate, tapering into a slender spreading point; nut oblong-obovate, crossed with faint lines. — River banks, Florida, and westward. August–Sept. — Spikes 2″–3″ long.

11. TRICHELOSTYLIS, Lestib.

Spikes terete, many-flowered. Scales imbricated in few (4–8) rows. Perianth none. Style 3-cleft, tumid at the base, deciduous. Nut 3-angled. — Culms jointless, leafy at the base. Spikes umbelled.

1. **T. autumnalis,** Nees. Culms slender, flat, 2-edged, 6′ – 12′ high. tufted; involucre 2-leaved, mostly shorter than the simple compound or decompound umbel; spikes linear-lanceolate; scales ovate-lanceolate, mucronate, imbricated in 4 rows; stamens 2; nut white, obovate, obtuse, often warty, (Scirpus autumnalis, *L.*) — Low grounds, very common. July – Oct. ①.

2. **T. miliacea,** Nees. Culm weak, compressed-4-angled (6′ – 12′ high); leaves ensiform, straight, erect; umbel decompound, spreading; spikes small (1″ wide), globular, the scales oblong, obtuse, 3-nerved; nut obovate, roughish. — Bogs and ditches, Florida.

12. ISOLEPIS, R. Br.

Spikes few – many-flowered. Scales imbricated in few – several rows. Perianth none. Style 3-cleft, the tumid base persistent at the apex of the 3-angled nut. — All annuals (in our species), with filiform or bristleform culms and leaves. Spikes umbelled or clustered. Leaves radical.

* *Spikes umbelled or solitary.*

1. **I. capillaris,** R. & S. Culm (4′ – 6′ high) smooth, furrowed, and, like the rough-edged leaves, bristle-like; spikes 3 – 4, in a simple umbel, oblong, 6 – 8-flowered; scales oblong, obtuse, strongly keeled, brown on the sides, imbricated in 4 rows; nut obovate, obtuse, nearly equal-sided, transversely wrinkled; stamens 2. — Moist sandy places, Florida, and northward. June – Sept. — Sheaths of the leaves bearded at the throat. Involucre 2 – 3-leaved, scarcely longer than the umbel.

2. **I. ciliatifolia,** Torr. Culms tufted, filiform, angled (6′ – 12′ high): leaves bristle-form, hispid on the edges, the sheaths bearded at the throat; umbel compound; spikes several (1″ – 2″ long), 6 – 12-flowered, linear-oblong; scales oval, strongly keeled, brown on the sides; nut obovate, very obtuse, nearly equal-sided, obscurely wrinkled. — Dry sandy places, Florida to North Carolina. August – Sept.

3. **I. coarctata,** Torr. Culms (1° high) terete, filiform; leaves bristle-form, smooth, with the sheaths bearded; umbel compound, contracted; spikes (3″ long) linear-oblong, 10 – 15-flowered; scales ovate, acutish, imbricated in 4 rows; nut flat on the inner face, obtuse-angled in front, obscurely dotted. — Dry sandy soil, Georgia and South Carolina, near the coast. Sept. – Oct — Rays of the umbel ½′ long.

4. **I. carinata,** Hook. & Arn. Culms setaceous, with a single setaceous leaf at the base, cæspitose; spike solitary, apparently lateral, ovate, 6 – 8-flowered; scales ovate, acute, strongly keeled, twice as long as the acutely 3-angled roughish nut. — New Orleans (*Dr. Hale*), and northward.

* * *Spikes clustered in a terminal head.*

5. **I. stenophylla,** Torr. Culms (2′ – 4′ high) densely tufted, 3-angled, and, with the bristle-form leaves and involucre, bristly-ciliate; involucre much longer than the head, 3 – 4-leaved, dilated and ciliate at the base; spikes 4 – 6, oblong-linear, 8 – 10-flowered; scales lance-ovate, slender-pointed, hispid on

the 3-nerved keel; nut (bluish) obovate, obtuse, wrinkled. — Dry sandy soil, Florida to North Carolina. August – Sept.

6. **I. Warei,** Torr. Culms filiform (1° – 1½° high), smooth, 3-angled, much longer than the bristle-form hispid leaves; sheaths bearded at the throat with long silky hairs; leaves of the involucre rigid, twice as long as the head, orbicular and cut-fringed at the base; spikes 8 – 10 in a head, ovate, many-flowered; scales ovate, mucronate, many-nerved; nut obovate, obtusely angled, obscurely wrinkled. — Dry sands near the coast, Florida. Sept. — Heads ½′ in diameter.

13. ABILDGAARDIA, Vahl.

Spikes many-flowered. Scales imbricated in 2 or (by the twisting of the rachis) 3 rows, keeled, decurrent on the rachis, deciduous. Perianth none. Stamens 1 – 3. Style 3-cleft, tumid at the base, deciduous. Nut 3-angled. — Culms jointless, leafy at the base. Spikes solitary, clustered or umbelled.

1. **A. monostachya,** Vahl. Culms filiform, tufted (6′ – 10′ high); leaves shorter than the culm, filiform, obtuse, concave; spikes solitary (rarely by pairs), ovate, acute, compressed, 8 – 12-flowered, much longer than the bract-like mucronate 1-leaved involucre; scales broadly ovate, acute or mucronate, compressed-keeled, with broad and white margins; stamens 3; nut somewhat pear-shaped, 3-angled, warty, yellowish white. — South Florida (*Dr. Blodgett*).

14. RHYNCHOSPORA, Vahl. BEAK RUSH.

Spikes 1 – several-flowered. Scales imbricated in few rows, the lowest empty, the upper usually bearing imperfect flowers. Perianth of 3 – 6 (rarely 12 – 20) hispid or plumose bristles, occasionally wanting. Stamens mostly 3. Style 2-cleft. Nut lenticular or globose, crowned with the dilated and persistent base of the style (tubercled). Perennials, with jointed and leafy culms. Spikes small, disposed in axillary and terminal corymbs or clusters.

§ 1. ERIOCHÆTE. — *Bristles of the perianth* 6, *plumose.*

1. **R. plumosa,** Ell. Culms (6′ – 12′ high) and leaves filiform; spikes few, in about three small clusters at the summit of the culm; nut nearly globular, strongly wrinkled, pointed with the short ovate smooth tubercle; bristles rather longer than the nut, plumose throughout or nearly to the summit. — Low pine barrens, Florida to North Carolina. June – July.

Var. **intermedia.** Culms taller (1° – 2° high); leaves narrowly linear; clusters 4 – 6, forming an interrupted spike at the summit of the culm; nut obovate, pointed with the conical-beaked pubescent tubercle; bristles plumose only at the base, or below the middle. — Sandy pine barrens, often in dry places, Florida.

2. **R. semiplumosa,** Gray. Culms erect, rigid (1° – 2° high); leaves narrowly linear; spikes oblong-ovate, dark brown, crowded in a terminal head, or rarely in a remote axillary one; nut globose-obovate, faintly wrinkled, pointed with the short broadly conical smooth tubercle; bristles exceeding

the tubercle, plumose below the middle. — Dry sandy ridges near the coast, Florida. July – August. — The leaves, like those of the preceding species, have a joint-like contraction near the middle.

3. **R. oligantha,** Gray. Culms (6′ – 12′ high) and smooth leaves bristle-like, reclining; corymb terminal, of 3 – 6 large (4″ long) ovate-lanceolate whitish stalked spikes; nut oval, lenticular, faintly wrinkled; tubercle dilated at the base, conical, flat; bristles longer or shorter than the nut, plumose below the middle. — Low open pine barrens, Florida to North Carolina. June – July.

§ 2. RHYNCHOSPORA proper. — *Bristles of the perianth* 3 – 20, *smooth, scabrous, or hispid.*

∗ *Nut transversely wrinkled or uneven: bristles denticulate or hispid upward.*

+– *Bristles shorter than the nut.*

4. **R. rariflora,** Ell. Culms and leaves bristle-form; corymbs 2 – 3, remote, spreading; spikes few and scattered, ovate; nut broadly obovate, biconvex, strongly wrinkled, twice as long as the 6 fragile bristles; tubercle flat, broadly conical, ½ as long as the nut. — Low grassy pine barrens. June – July. — Culms 1° – 1½° long, commonly reclining. Spikes pedicelled.

5. **R. Torreyana,** Gray. Culms erect, slender, nearly terete; leaves narrowly linear or bristle-form; corymbs 1 – 3, remote, erect; nut obovate, flat, about twice as long as the 6 bristles; tubercle compressed-conical, dilated at the base, ½ the length of the nut. — Wet ground, South Carolina, and northward. July. — Culm 1° – 3° high. Corymbs many-flowered and somewhat spreading, or few-flowered and capitate.

6. **R. cymosa,** Nutt. Culms (2° – 3° high) 3-angled; leaves narrowly linear; corymbs mostly 3, distant, open or contracted; spikes ovate, clustered, light brown; scales mucronate; nut broadly obovate, biconvex, faintly wrinkled, twice as long as the 3 – 6 bristles; tubercle broadly conical, compressed, ½ as long as the nut. — Var. GLOBULARIS. Smaller (6′ – 15′ high); corymbs reduced to few globose-ovate dark brown clustered spikes; nuts smaller, and deeper furrowed. — Low ground, Florida, and northward. June – July.

7. **R. compressa,** Carey. Culms stout, 3-angled (2° – 3° high); leaves linear, rigid; corymbs 3 – 5, remote, spreading; spikes ovate, numerous, in dense bracted clusters; scales acute; nut obovate; the flat or somewhat depressed sides strongly wrinkled and pitted, twice as long as the 6 bristles; tubercle conical-beaked, with the dilated base wider than the nut. — Margins of pine barren ponds, Florida. June – July. — Radical leaves numerous, 1° long.

+– +– *Bristles equalling or longer than the nut* (*in No.* 9 *variable*).

8. **R. stenophylla,** Chapm. Culms and leaves setaceous; corymbs 1 – 2, small, erect; spikes 5 – 7, distinct, lanceolate-oblong; nut obovate, biconvex, strongly wrinkled, twice as long as the conical-beaked tubercle; bristles 6, slender, nearly as long as the nut and tubercle. — Low grassy pine barrens, Florida. June – July. — Culms tufted, 1° long.

9. **R. microcarpa,** Baldw. Culms (2° high) erect, slender, nearly terete; leaves narrowly linear; corymbs 4–6, slender, spreading, compound; spikes small, round-ovate, scattered; nut round-obovate, lenticular, strongly wrinkled, tipped with the very short and broad tubercle; bristles 5–6, as long as the nut. — Varies with the spikes clustered, and the 3 bristles not half the length of the nut. — Margins of ponds, Florida to North Carolina. July–August.

10. **R. inexpansa,** Vahl. Culms nearly terete, slender (2°–3° high); leaves narrowly linear; corymbs 4–5, narrow, remote, compound, drooping; spikes scattered, lanceolate; nut lanceolate-oblong, compressed, twice as long as the conical-beaked tubercle; bristles 6, very slender, twice the length of the nut. — Swamps and banks of streams in the middle districts. July–August.

11. **R. decurrens,** Chapm. Culms (2°–3° high) erect, nearly terete, very slender and bending near the top; leaves linear, elongated, flat and somewhat glaucous; corymbs 5–6, remote, compound, the bristle-like branches spreading or drooping; spikes (1″ long) ovate, scattered, pedicelled; nut obovate, lenticular, slightly wrinkled and pitted; tubercle compressed, crescent-shaped, with the edges decurrent, ½ the length of the nut; bristles 6, as long as the nut. — Marshy banks of lakes and rivers, West Florida. June–July.

12. **R. patula,** Gray. Culms 3-angled (2°–3° high), slender above; leaves linear; corymbs 3–5, remote, compound, widely spreading; spikes scattered, ovate, on slender stalks; nut round-obovate, lenticular; tubercle flat, conical, half the length of the nut, ciliate on the edges; bristles 6, rather longer than the nut. — Varies with the spikes lanceolate, the narrower nut contracted at the base, and the bristles twice the length of the nut — River swamps, Florida and Georgia. June–July.

13. **R. Elliottii,** Dietr. Culm (2°–3° high) 3-angled; leaves linear (1″–2″ wide); corymbs 3–5, compound, the lower ones remote; spikes small, ovate, crowded; nut obovate, flattened, strongly wrinkled; tubercle broadly conical, flat, ½ as long as the nut; bristles 6, strongly hispid, as long as the nut and tubercle. (Scirpus schœnoides, *Ell.*) — Margins of ponds in the pine barrens, Georgia, Florida, and westward. June–July. — Nuts ½″ long, several on a spike.

14. **R. caduca,** Ell. Culms stout (3°–4° high), 3-angled; leaves broadly linear (3″–4″ wide); corymbs 4–6, compound, remote, the branches and short pedicels erect; spikes very numerous, approximate, ovate; scales caducous; nuts 4–8 on the spike, obovate, biconvex, faintly wrinkled; tubercle flat, conical, ciliate, ½ as long as the nut; bristles 6, slender, twice as long as the nut. — Swamps and wet banks of streams. August. — Spikes 2″ long. Nut twice as large as in No. 13.

15. **R. stipitata,** Chapm. Culms tall (3°–5° high), triangular, bending; leaves linear; corymbs 4–5, compound, drooping; spikes (4″ long) ovate-lanceolate, the scales persistent; nuts stipitate, 1–3 in a spike, roundish, biconvex, finely wrinkled, twice as long as the compressed-conical tubercle; bristles 6, more than twice the length of the nut; stamens 3. — River banks, South Florida.

16. **R. miliacea,** Gray. Culms tall (3° - 4° high), 3-angled; leaves flat (3″ - 4″ wide); corymbs 6 - 8, distant, compound; the branches and slender pedicels spreading horizontally; spikes ovate; scales caducous; nuts 4 - 8 on the spike, round-obovate, biconvex; tubercle compressed, conical; bristles 6, slender, as long as the nut and tubercle. — Bogs and deep miry places, Florida to North Carolina. June - July. — The nuts of this and the preceding species remain on the spike after the scales have fallen away.

17. **R. punctata,** Ell. Culms (1° - 2° high) slender, 3-angled; leaves short, linear-lanceolate; corymbs 3 - 4, cluster-like, the lateral ones simple, distant, and long-peduncled; spikes ovate; nut obovate, compressed, with transverse pitted furrows, rather shorter than the 6 slightly hispid bristles; tubercle conical, compressed, shorter than the nut. — Near Savannah and St. Mary's, Georgia (*Elliott*). May - June.

18. **R. Grayii,** Kunth. Culm solitary, 3-angled (2° - 3° high); leaves linear, rigid, shining; corymbs 3 - 4, distant, capitate; spikes few, large, ovate; nut round-obovate, tumid, slightly pitted, dull; tubercle short-conical, dilated at the base; bristles 6, as long as the nut and tubercle; stamens 3 - 6. (R. distans, *Ell.*) — Dry pine barrens, Florida to North Carolina. June - July.

* * *Nut smooth and even: bristles hispid upward.*

19. **R. megalocarpa,** Gray. Culms stout (2° - 3° high), 3-angled; leaves rigid, linear, shining, corymbs 4 - 6, distant, spreading or somewhat contracted; spikes (3″ long) ovate, single; nut large (2″ long), orbicular-obovate, biconvex, light brown, turning blackish; tubercle short-conical from a spreading base; bristles 6 - 10, commonly shorter than the nut; stamens 12. (R. dodecandra, *Baldw.*) — Dry sands along the coast of Florida, and Wilmington, North Carolina. May - August.

20. **R. Baldwinii,** Gray. Culms (2° - 3° high) sharply 3-angled, rough; leaves short, glaucous, smooth, very acute; corymbs 1 - 3, contracted or nearly capitate; spikes ovate, dark chestnut; nut ovate, lenticular, twice as long as the flat conical tubercle; bristles 12 - 14, longer than the nut; stamens 6. — Wet pine barrens, Georgia and Florida. June - July.

21. **R. ciliata,** Vahl. Culms blunt-angled (1° - 2° high); leaves short, glaucous, linear-lanceolate, obtuse, fringed on the margins; corymbs mostly solitary, capitate; spikes light brown, ovate; nut oval, lenticular, minutely roughened; tubercle flat, conical; bristles 6, ⅓ the length of the nut; stamens 3. — Wet pine barrens, Florida to North Carolina. June - August. — Leaves 2′ - 4′ long. Lateral corymb (when present) remote.

22. **R. fascicularis,** Nutt. Culms obscurely 3-angled, commonly slender (2° - 3° high); leaves pale, narrowly linear; corymbs 2 - 3, distant, capitate, or sometimes compound; bracts conspicuous; spikes light brown, oblong-ovate, densely clustered; scales mucronate-awned; nut oval or orbicular, lenticular, dark brown, usually pale in the middle and on the prominent edges; tubercle white, broadly or narrowly conical, obtuse, compressed, one third to one half the length of the nut; bristles 4 - 6, varying from one half to nearly twice the length of the nut. (R. distans, *Nutt.*, the form with longer bristles.) — Low pine barrens, Florida to North Carolina. June - July.

23. **R. fuscoides,** Bœkl. Closely allied to the preceding, but every way smaller; culms 6′ – 18′ high, cæspitose; corymbs capitate, by pairs at the summit of the culm, and often a distant lateral one; spikes ovate; bristles 6, as long as the nut, rarely twice as long. (R. fascicularis, var. distans, *Flora.*) — Low pine barrens, Florida to North Carolina. July – Sept.

24. **R. brachychæta,** Sauv. Culms cæspitose, prostrate, 6′ – 12′ long, setaceous, like the leaves; corymb solitary, terminal, capitate; spikes few, pale; nut minute, orbicular, thrice the length of the 3 – 6 bristles. (R. fascicularis, var., *Flora.*) — Wet pine barrens, West Florida.

25. **R. filifolia,** Gray. Culms (1° – 2° high) filiform, erect; leaves setaceous; corymbs 2 – 4, distant, capitate; spikes densely clustered, lanceolate; nut minute, obovate, lenticular, smooth and shining, twice as long as the compressed triangular-ovate ciliate tubercle; bristles 6, rigid, nearly as long as the nut and tubercle. — Margins of pine barren ponds, Florida to North Carolina. July – August. — Culm nearly terete. Spikes brown. Nut pale, with thickened edges.

26. **R. pallida,** M. A. Curtis. Culms rigid, acutely 3-angled, glaucous green, rough above; leaves erect, ciliate-serrulate; corymb terminal, capitate, compact; spikes very pale ferruginous, lanceolate, 1-flowered; nut obovate, smooth, compressed, reddish brown, with a paler disk; tubercle very short, depressed, apiculate; bristles 3, one fifth the length of the nut; stamens 3; style 2-cleft. — Wilmington, North Carolina (*Curtis*). June. — Culm 12′ – 20′ high. Nut 1″ long.

27. **R. gracilenta,** Gray. Culms and leaves filiform or setaceous; corymbs 2 – 3, distant, capitate, brown; spikes densely clustered, ovate-lanceolate; nut oval, dull, as long as the slender subulate tubercle; bristles 6, twice as long as the nut. — Wet pine barrens, Florida, and northward. July – August. — Culms 1° – 2° high.

* * * *Nut smooth and even: bristles hispid downward.*

28. **R. alba,** Vahl. Culms (1° – 2° high) slender, 3-angled above; leaves narrowly linear or setaceous; corymbs mostly 2, capitate, white, turning brownish, the lower one long-peduncled; spikes ovate-lanceolate, 1-flowered; nut obovate, lenticular, twice as long as the compressed subulate tubercle; bristles 10 – 20, rigid, as long as the nut and tubercle, ciliate at the base. — Wet springy places, Florida, and northward. August – Sept.

29. **R. glomerata,** Vahl. Culms (2° – 3° high) 3-angled; leaves narrowly linear; corymbs 4 – 12, often by pairs, capitate, dark brown; spikes ovate-lanceolate; nut obovate from a stalk-like base, lenticular; tubercle subulate, as long as the nut, with its dilated base equalling it in width; bristles 6, stout, nearly as long as the nut and tubercle. — Var. PANICULATA. (R. paniculata, *Gray.*) Culms stout (3° – 4° high); leaves flat (2″ – 3″ wide); corymbs compound, paniculate, with the very numerous spikes clustered at the summit of the branches. — Bogs and springy places, Florida to North Carolina, and westward. July – Sept.

30. **R. cephalantha,** Gray. Culms (2° – 3° high) nearly terete; leaves narrowly linear; corymbs 4 – 8, mostly by pairs, globose, compact; spikes nu-

merous, lanceolate-oblong, dark brown; nut broadly obovate from a stalk-like base, compressed, almost truncate at the apex, and much wider than the base of the subulate tubercle; bristles 6, as long as the nut and tubercle. — Bogs and shady swamps, Florida, and northward. July – August.

§ 3. HALOSCHŒNUS. — *Perianth none.*

31. **R. pusilla,** Chapm. Culms (6′ – 12′ high) and leaves bristle-form; corymbs 2 – 3, distant, erect-spreading, the upper one compound; spikes minute, ovate, mostly scattered on the branches, 3-flowered; scales ovate, brown; nut white, oblong-obovate, compressed-lenticular, contracted at the base, transversely wrinkled; tubercle depressed-conical, free at the base. — Margins of pine barren ponds, Middle and West Florida. June.

32. **R. divergens,** Chapm. Culms (6′ – 12′ high) and leaves filiform or bristle-form; corymbs 2 – 3, distant, spreading; spikes small, scattered, pedicelled, 3-flowered; scales brown, ovate; nut obovate, biconvex, minutely pitted; tubercle depressed, sessile, minutely pointed in the centre. — Low pine barrens, Florida to South Carolina. June.

33. **R. Chapmanii,** M. A. Curtis. Culms (12′ – 20′ high) densely tufted, erect, setaceous or filiform, like the short and flat leaves; corymb solitary, terminal, capitate; spikes whitish, lanceolate, densely clustered, 1-flowered; scales 5, the uppermost fertile; nut oval, lenticular, smooth and shining; tubercle short, sessile, broadly conical; stamens 1 – 2. — Flat pine barrens, Florida to South Carolina. July – August.

§ 4. CERATOSCHŒNUS. — *Perianth of* 4 – 6 *bristles: style entire, or slightly 2-cleft: tubercle subulate,* 2 – 4 *times longer than the nut.*

34. **R. corniculata,** Gray. Culms stout (3° – 4° high), 3-angled; leaves flat, scabrous on the edges (6″ – 10″ wide); corymbs 3 – 5, erect, compound; spikes brown, ovate lanceolate; style very long, the lower and persistent portion upwardly scabrous; nut narrowly obovate, smooth, the sides concave and minutely dotted; bristles 5 – 6, rigid, smoothish, half as long as the nut; tubercle subulate, 3 – 4 times the length of the nut. (Rhynchospora longirostris, *Ell.*) — Ponds and ditches, Florida, and northward. July – Sept. — Leaves 1° - 2° long. Nut and tubercle nearly 1′ long.

35. **R. macrostachya,** Torr., var. **patula.** Corymbs very large decompound, diffuse; style minutely 2-cleft; nut broadly obovate; bristles slender, twice as long as the nut; otherwise like the preceding. — Ponds and ditches, Florida. August. — Culms 3° – 4° high. Terminal corymbs often 1° in diameter.

36. **R. cyperoides,** Mart.? Culms (2° – 3° high) nearly terete, straight, like the long narrow erect and channelled leaves; spikes densely clustered in 1 – 6 globular heads, the lateral heads long-peduncled and somewhat corymbose; scales about 9 (the fourth fertile), whitish; style very long, minutely 2-cleft; nut obovate, lenticular, obscurely wrinkled, hispid on the margins above, shorter than the 6 slender bristles; tubercle bristle-awl-shaped, twice as long as the nut. (C. capitatus, *Flora.*) — Pine barren ponds, Florida, and westward. June – August. — Leaves 2″ – 4″ wide, as long as the culm. Head composed of 30 or more spikes. Nut and tubercle 3″ long.

15. CHÆTOSPORA, R. Br.

Spikes few- (1 – 8-) flowered. Scales imbricated in two rows; the lower ones empty, the upper bearing perfect flowers. Perianth of 3 – 6 scabrous or plumose bristles. Stamens 3. Style 3-cleft, not dilated at the base, nearly deciduous. Nut triangular, mostly pointed by the persistent base of the style. – Leaves radical, narrow. Spikes in a terminal cluster, subtended by a 1 – 2-leaved involucre.

1. **C. nigricans,** Kunth. Culms tufted, jointed near the summit; leaves rigid, erect, semi-terete, shorter than the culms; sheaths black; involucre 2-leaved, the lower longer than the ovoid dark brown head; spikes ovate-lanceolate, compressed, 6 – 8-flowered; scales ovate, keeled; rachis zigzag; bristles 6, unequal, dilated at the base, hispid upward, longer than the globose-3-angled white and polished nut. (Schœnus nigricans, *L.*) — Damp soil, chiefly along the coast, Florida. May. ♃ — Culms 1° – 1½° high.

16. PSILOCARYA, Torr.

Spikes many-flowered, terete. Scales imbricated in several rows, membranaceous, all bearing perfect flowers. Perianth none. Stamens 2. Style 2-cleft Nut biconvex, transversely wrinkled, crowned with the persistent base of the style. — Culms leafy. Spikes ovate, disposed in spreading lateral and terminal corymbs.

1. **P. rhynchosporoides,** Torr. Culms nearly terete (½° – 2° high); leaves narrowly linear, longer than the culm; corymbs 2 – 3, widely spreading, the terminal one mostly compound; spikes pedicelled; scales ovate, acute; nut orbicular, strongly wrinkled; tubercle compressed, very short, sessile, but not decurrent on the edges of the nut. (Scirpus nitens, *Vahl.*) — Shallow pine barren ponds, Florida to North Carolina. July. ① — Culms commonly rooting at the lower joints.

2. **P. corymbiformis,** Benth. Corymbs less spreading; scales of the spikelets thinner and narrower, obtuse; nut faintly wrinkled; tubercle triangular, acuminate, as long as the nut; otherwise like the preceding. — Georgia, Florida, and westward.

17. DICHROMENA, Richard.

Spikes compressed, few-flowered, aggregated in a terminal head, and surrounded by an involucre of several leaves, which are commonly white at the base. Scales imbricated in two rows, most of them bearing abortive flowers. Stamens 3. Style 2-cleft. Nut lenticular, crowned with the broad and persistent base of the style. Perianth none. Perennials. Culms jointless, leafy at the base. Scales white, membranaceous.

1. **D. leucocephala,** Michx. Culms (1° – 1½° high) slender, 3-angled; leaves narrowly linear; involucre of 4 – 7 narrow leaves; nut orbicular, wrinkled; tubercle flat, broadly conical, sessile, but not decurrent. – Damp soil, Florida to North Carolina. August – Sept. — Involucre unchanged in drying.

2. **D. latifolia,** Baldw. Culms stout (2° – 3° high), nearly terete; leaves broadly linear, elongated; leaves of the involucre 8 – 9, tapering from the broad (3″ – 4″ wide) base to the slender summit, becoming reddish; nut round-obovate, faintly wrinkled; tubercle flat, conical, obtuse, the sides decurrent on the edges of the nut. — Low pine barrens, Florida to North Carolina. May – July. — Heads larger than those of the preceding.

18. CLADIUM, P. Br.

Spikes ovate, 1 – 2-flowered. Scales loosely imbricated, the lower ones empty. Perianth none. Stamens 2. Style 2 – 3-cleft, the divisions often 2 – 3-cleft, deciduous. Nut globose-ovate, the pericarp thickened and corky near the apex. Tubercle none. — Culms tall. Spikes disposed in axillary and terminal cyme-like panicles.

1. **C. effusum,** Torr. (SAW-GRASS.) Culms (4° – 8° high) nearly terete; leaves linear, elongated, saw-edged; panicles numerous, diffuse; spikes small, 3 – 4 in a cluster, deep brown; scales about 6, the uppermost bearing a perfect flower, the next below staminiferous, the others empty; nut ovate, pointed, wrinkled. (Schœnus effusus, *Swartz.*) — Fresh or brackish marshes along the coast, Florida to North Carolina, and westward. July – August.

2. **C. mariscoides,** Torr. Culms nearly terete; leaves narrow-linear, smoothish; panicles 2 – 3, the few branches erect; spikes 3 – 8 in a cluster; nut ovate, acute, faintly wrinkled. (Schœnus, *Muhl.*) — Grassy ponds, West Florida, North Carolina, and northward.

19. SCLERIA, L. NUT RUSH

Flowers monœcious. Sterile spike few – many-flowered. Scales loosely imbricated in 2 – 3 rows. Fertile flowers solitary, separate or at the base of the sterile spike. Stamens 1 – 3. Style 3-cleft. Nut globose or ovate, stony or bony. — Chiefly perennials, with creeping rootstocks, and triangular leafy culms. Spikes clustered, lateral and terminal.

§ 1. SCLERIA proper. — *Nut supported by an annular or 3 – 6-lobed disk.*

* *Nut smooth: stamens 3.*

1. **S. triglomerata,** Michx. Culms stout, rough, sharply angled (2° – 3° high); leaves broadly linear, smooth or hairy; spikes disposed in 3 – 6 clusters at the summit of the culm, and 1 – 2 distant lateral ones on long and drooping peduncles; disk forming a complete narrow ring at the base of the globose-ovate yellowish white nut. — Low grounds, Florida, and northward. June – August.

2. **S. oligantha,** Ell., Michx.? Culms (1° – 2° high) slender, smooth, sharply angled, often glaucous, like the smooth linear leaves; spikes 3 – 5, single, scattered, forming a terminal interrupted compound spike, and 1 – 2 distant lateral ones, on long drooping peduncles; bracts leafy; disk of 9 minute globular lobes at the base of the white and polished ovate nut. — Thickets and margins of fields, Florida to South Carolina. July.

* * *Nut reticulated: disk of 3 flattened lobes: stamens* 2.

3. **S. reticularis,** Michx. Culms slender (1° – 1½° high), scabrous below; leaves narrowly linear; spikes clustered, axillary and terminal, the lateral ones on a short erect peduncle; nut globose, small, reticulated and pitted; lobes of the disk appressed to the base of the nut. — Margins of ponds, Florida and northward. August – Sept.

4. **S. Torreyana,** Walpers. Culms weak, rough on the angles; leaves linear, obtuse; spikes separate, the axillary ones on a long and drooping peduncle; nut globose, wrinkled and somewhat hairy, obscurely pitted; lobes of the disk appressed to the nut. — Damp pine barrens, Florida, and northward. August – Oct. — Culms 1° – 1½° long. Nut 1½″ – 2″ in diameter.

* * * *Nut warty: disk bearing* 3 – 6 *globular lobes: stamens* 3.

5. **S. ciliata,** Michx. Culms slender, rigid (1½° – 2° high), smooth below, sparingly fringed on the angles above; leaves 2, narrowly linear (1″ wide), rigid, smooth, or with scattered hairs on the margins; sheaths pubescent; clusters terminal; sterile spikes large, many-flowered; nut globose, pointed, closely beset with unequal warts, these corresponding to the angles of the nut and at the base larger than the rest; lobes of the disk 3, globular, entire. — Dry pine barrens. Florida to South Carolina. June – August. — Rhizoma thick and creeping.

6. **S. Elliottii,** Chapm. Culms stout (½° – 1° high), densely rough-fringed on the angles throughout; leaves 3 – 4, broadly linear (2″ – 3″ wide), closely fringed on the margins and midrib beneath; sheaths pubescent; clusters 2, the lateral one remote, on a short erect peduncle; sterile spike small, few-flowered; nut globose, deeply wrinkled or pitted, and with slender warty projections at the base; lobes of the disk 3, globose, 2-lobed. (S. hirtella, *Ell.*) — Low pine barrens, Florida to North Carolina. July.

7. **S. pauciflora,** Muhl. Smoothish or hairy or villous throughout; culms (6′ – 12′ high) slender; leaves narrowly linear; clusters small, of 1 – few spikes, terminal, and also a remote axillary one on a short erect peduncle; sterile spike few-flowered; nut globose (small), pointed, closely beset with minute warts, these at the base elongated; lobes of the disk 6, distinct, globose. (S. Caroliniana, *Willd.*, the villous form.)

Var. **glabra.** Smooth throughout, or the leaves and bracts scabrous at the summit; culms erect (1° high), rigid, but slender, like the erect leaves; clusters terminal; spikes many-flowered; lobes of the disk 3, each 2-lobed. This also varies, with longer (2° – 2½°) diffuse culms, and with 1 – 2 distant axillary clusters on long (5′ – 10′) drooping peduncles. — Low sandy pine barrens, Florida, and northward; the varieties chiefly southward. May – August.

§ 2. HYPOPORUM. — *Disk none: nut concave and often pitted at the sides of the triangular base.*

* *Clusters of spikes terminal, leafy-bracted.*

8. **S. Baldwinii,** Torr. Culms rough above (2° – 3° high); leaves mostly 2, linear, rigid; nut large (2″ long) dull white, globose-ovate, obscurely angled,

even, or longitudinally furrowed, concave at the sides of the abruptly contracted base, slightly pointed. — Pine barren swamps, Florida and Georgia, near the coast. June – July.

9. **S. gracilis,** Ell. Culms slender (1° high), smooth, like the filiform leaves; nut small (1″ long), ovate, dull white, furrowed lengthwise, the sides at the base concave and pitted. — Low pine barrens, Florida to South Carolina. June – July. — Plant brownish, tufted.

* * *Clusters of spikes (small) numerous, scattered near the summit of the culm, forming an interrupted compound spike: bracts mostly short.*

10. **S. filiformis,** Swartz. Glaucous; culms slender (1½° – 2° high), smooth; leaves narrowly linear, rough on the margins and keel, ciliate at the throat; clusters 3 – 4, erect, few-flowered, the lowest remote, leafy-bracted; scales lanceolate, rough-pointed; stamens 3; nut obovate, obscurely 3-angled, smooth and glassy, concave at the base, not pitted. — South Florida. Oct.

11. **S. verticillata,** Muhl. Culms very slender (6′ – 12′ high), smooth, like the narrowly linear or filiform leaves and sheaths; clusters 3 – 5, erect; scales smooth; nut very small, globose-3-angled, pointed, rough with raised wavy ridges, not pitted at the base. — Varies with hairy sheaths, more numerous (6 – 9) clusters, and reticulated nuts. — Damp soil, Florida, and northward. June – July.

12. **S. hirtella,** Swartz. Culms (6 – 12′ high) smooth; leaves linear, and, like the sheaths, hairy; clusters 4 – 6, nodding; scales bristle-awned; nut globose-3-angled, very minute, pointed, smooth, not pitted at the base. — Low pine barrens, Florida to South Carolina. July – August.

20. CAREX, L. SEDGE.

Flowers monœcious, rarely diœcious, spiked. Sterile and fertile flowers in the same spike (*androgynous*), or in separate spikes. Scales imbricated in few – many rows. Stamens 2 – 3. Style 2 – 3-cleft, exserted from a sac (*perigynium*) which encloses the ovary and the lenticular biconvex or 3-angled nut. — Perennials, with grass-like leaves. Spikes from the axils of scale-like or leaf-like bracts, simple or compound.

§ 1. VIGNEA. — *Stigmas two: nut lenticular, or more or less compressed.*

1. *Spikes all androgynous, short, sessile, mostly exceeding the bracts.*

* *Sterile and fertile flowers variously disposed.*

1. **C. bromoides,** Schk. Spikes 4 – 6, distinct, oblong-lanceolate, compressed; perigynia lanceolate, erect, finely nerved, ending in a long flat rough-margined 2-cleft beak, longer than the ovate-lanceolate mucronate scale. — Swamps and bogs, Florida, and northward. March – April. — Culms tufted, weak and slender, 1° – 1½° high. Leaves narrowly linear. Spikes occasionally wholly sterile or fertile. Perigynia somewhat 2-ranked.

* * *Spikes with the upper flowers sterile, the lower fertile.*

+ *Spikes indefinite, disposed in a close panicle.*

++ *Perigynia sessile.*

2. **C. decomposita,** Muhl. Panicle long, drooping, the upper spike-like branches densely clustered, the lower elongated, distinct, and spreading; perigynia obovate, biconvex, nerved, abruptly short-beaked, about the length of the ovate pointed white-margined scale. — Wet margins of ponds and streams. May. — Culms erect, stout, 2° – 3° high. Panicle 4′ – 6′ long. Bracts of the lower spikes bristle-form. Perigynia dark brown at maturity.

3. **C. vulpinoidea,** Michx. Panicle spike-like, erect; clusters of spikes 8 – 12, short, oval, the upper ones densely crowded; perigynia small, ovate or roundish, compressed, short-beaked, 2-cleft at the orifice, faintly nerved at the broad base; scales yellowish, mucronate. — Low ground. May. — Culms 1½° – 2° high. Panicle 2′ – 3′ long, cylindrical. Bracts of the lower spikes setaceous or leaf-like, often exceeding the panicle. Perigynia yellowish at maturity.

++ ++ *Perigynia short-stalked, truncate at the base: culms acute-angled, stout.*

4. **C. crus-corvi,** Shuttleworth. Panicle very large, the lower branches long and distinct, the upper short and crowded; perigynia plano-convex, ovate, strongly nerved, dilated at the base, tapering into a long and slender rough-edged deeply 2-cleft beak, thrice the length of the ovate mucronate scale. — River swamps, Florida, and westward. May. — Culms, like the broad (½′ – ¾′ wide) leaves, glaucous. Panicle 4′ – 9′ long, oblong or spike-like.

5. **C. stipata,** Muhl. Panicle oblong; the short ovate branches densely clustered; perigynia ovate-lanceolate, strongly nerved, tapering into a stout rough-edged erect-spreading 2-cleft beak, 2 – 3 times the length of the scale. — Swamps. April – May. — Plant yellowish. Culms 1° – 2° high. Leaves 4″ – 9″ broad.

+ + *Spikes* 4 – 10, *disposed in a simple spike or head, or* (*in No.* 6) *the lowest ones compound.*

6. **C. sparganioides,** Muhl. Spikes 6 – 10, ovoid, the upper crowded, the lower scattered and often compound; perigynia flattened, ovate, acute at the base, narrowly margined, nerveless, spreading, with a short and rough 2-cleft beak, twice as long as the thin ovate scale. — Upper districts of Georgia, and northward. — Culms stout, 2° high. Leaves broadly linear, as long as the culm. Common spike 2′ – 4′ long. Perigynia yellowish.

7. **C. Muhlenbergii,** Schkr. Spikes 5 – 8, ovoid, approximate, or crowded in an oblong head; perigynia round-ovate, plano-convex, strongly nerved, or (in var. enervis, *Boott*) nerveless, with a short and broad rough-edged 2-cleft beak, barely longer than the ovate short-pointed scale. — Dry sterile soil, Florida, and northward. — Culms 12′ – 18′ high, rigid, rough above, twice as long as the narrow leaves. Head or spike 1′ long. Bracts bristle-form, longer than the spikes.

8. **C. cephalophora,** Muhl. Spikes 5 – 6, small, crowded in a compact ovoid head; perigynia broadly ovate, few-nerved, short and rough-beaked, as

long as the ovate long-pointed scale. — Dry soil, Florida, and northward. — Culms 9′–15′ high, naked above, rough on the angles, tough and wiry. Leaves narrow. Head ½′ long. Bracts bristle-like.

9. **C. rosea,** Schk., var. **radiata,** Dew. Spikes 2–4, 3–6-flowered, distant; perigynia oblong, plano-convex, rough-beaked, spreading at maturity, twice as long as the broadly ovate obtuse or short-mucronate scale. — Upper districts, Georgia, and northward. — Culms 1° high, smooth, longer than the narrow leaves. Common spike 2′–3′ long. Bract of the lowest spike commonly exceeding the culm.

10. **C. Texensis,** Bailey. Spikes 4–5, scattered, few-flowered, all but the uppermost leafy-bracted; perigynia spreading, lanceolate, spongy at the base, smooth, more than twice longer than the ovate acute scale; culms very slender, ½°–1° high, exceeding the tender leaves. — Mississippi (*Tracey*), and westward.

11. **C. retroflexa,** Muhl. Spikes 4–5, crowded, or the lower ones distinct, ovoid, the lowest short-bracted; perigynia ovate-lanceolate, smooth-beaked, 2-cleft, at length widely spreading or reflexed, spongy at the base, barely longer than the ovate long-pointed scale. — Open woods, Florida, and northward. — Culms slender, 1° high, rough-angled above. Leaves narrow, shorter than the culm. Common spike about 1′ long.

* * * *Spikes with the lower flowers sterile, the upper fertile.*

12. **C. stellulata,** Good. Spikes 3–5, obovoid, distinct, the uppermost club-shaped at the base; perigynia ovate, rounded at the base, tapering into a short and rough 2-cleft beak, finely nerved, spreading and finally recurved, rather longer than the ovate pointed scale. (C. scirpoides, *Schk.*). — Shady river swamps, Florida, and northward. — Culms 6′–12′ high, weak. Leaves narrow and tender. Spikes small.

Var. **sterilis.** Sterile and fertile spikes on separate culms, or some of them either sterile or fertile on the same culm, otherwise like the preceding, and growing in similar places. (C sterilis, *Willd.*)

Var. **conferta.** Culms taller (2° high) and stouter; spikes larger and more crowded; perigynia round-ovate, twice as long as the broadly ovate barely pointed scale. — Pine barren swamps.

13. **C. canescens,** L., var. **alpicola,** Wahl. Spikes 5–7, small, scattered, roundish, 6–10-flowered; perigynia ovate, plano-convex, short and rough-beaked, spreading and tawny at maturity, rather longer than the ovate acute white scale. — High mountains of North Carolina, and northward. — Culms weak and slender, 10′–15′ high, longer than the narrow tender leaves.

14. **C. scoparia,** Schk. Spikes 6–8, approximate, ovate or oblong, many-flowered; perigynia oblong-lanceolate, narrowly margined, acute at the base, tapering into a long 2-cleft rough beak, longer than the ovate-lanceolate pointed scale, turning light brown at maturity. — Swamps, South Carolina, and northward. — Culms 1°–2° high, rough above, longer than the narrow leaves.

15. **C. tribuloides,** Wahl. Spikes 10 or more, crowded in an oblong head, oval or obovate, light green; perigynia lanceolate, tapering into a margined serrulate beak, nearly twice the length of the obtuse scale. (C. lagopo-

dioides, *Schr.*) — Wet banks and swamps. North Carolina, and westward. — Culms taller (2° – 2½° high), and leaves wider than the last. Spikes sometimes fewer, smaller and scattered. (Var. reducta, *Bailey*.)

16. **C. straminea,** Schk. Spikes 3 – 6, distinct, ovoid; perigynia ovate or round-ovate, broadly winged, abruptly narrowed into a short 2-cleft beak, somewhat tawny and spreading at maturity, longer than the ovate-lanceolate scale. — Dry ground. — Culms 1° – 2° high, rather rigid, exceeding the narrow-linear leaves.

Var. **fœnea,** Torr. Spikes longer and narrower, pale green; perigynia ovate, appressed, less broadly margined, tapering into a more slender beak; culms and leaves less rigid. — Low ground. Common.

Var. **mirabilis,** Tuck. Tall (2° – 3° high), and rather weak; spikes pale green, approximate; perigynia ovate-lanceolate, spreading at the tip, or slightly recurved. — Low woods in the upper districts.

17. **C. alata,** Torr. Spikes 6 – 10, large (6″ – 8″ long), ovoid, approximate; perigynia flat, broadly obovate, wing-margined, abruptly contracted into a very short beak, longer than the lanceolate scale; nut oval, stalked. — Marshes, Florida to North Carolina. — Culms 2° – 3° high, leafy below the middle. Spikes brownish at maturity. Perigynia 2½″ long.

2. *Uppermost spikes* (1 *or* 2) *sterile or androgynous, the lower fertile.*

18. **C. torta,** Boott. Sterile spike solitary, peduncled; fertile spikes mostly 3, linear-club-shaped, loosely flowered below, spreading, the lowest peduncled; perigynia elliptical, tapering and at length spreading or recurved at the apex, nerveless or nearly so, as long as the oblong black scale; culms smooth (1° high); leaves narrowly linear. — Mountain swamps, North Carolina, and northward.

19. **C. stricta,** Good. Sterile spikes 1 – 2; fertile spikes 2 – 4, linear-cylindrical, sessile or the lowest short-peduncled, erect, dense-flowered; perigynia elliptical, erect, nerveless, commonly shorter than the narrow obtuse reddish brown scale; culms (2° high) rough-angled; leaves linear. — Swamps in the upper districts.

20. **C. crinita,** Lam. Sterile spikes mostly 2, often with fertile flowers intermixed; fertile spikes 3 – 4, long-cylindrical, dense-flowered, on long drooping peduncles; perigynia round-ovate or obovate, somewhat inflated, 2-nerved, abruptly short-pointed, shorter than the long-awned scale; culms rough-angled above (2° – 3° high). — Swamps in the upper districts. — Spikes 1½′ – 3′ long.

21. **C. gynandra,** Schw. Perigynium ovate or elliptical, acute, obscurely nerved at the base, the upper ones crowded, and as long as the acute scale, the lower ones scattered, and shorter than the awned scales, sheaths scabrous; otherwise like the last. — Damp woods, Florida, and northward.

§ 2. CAREX proper. — *Stigmas* 3: *nut 3-angled: terminal spikes commonly sterile, the others fertile.*

1. *Spike solitary.*

* *Sterile at the summit.*

22. **C. polytrichoides,** Muhl. Spike linear, few-flowered; perigynia lanceolate-oblong, many-nerved, obtuse and entire at the apex, twice as long

as the oblong mucronate scale; bract scale-like or occasionally leafy and exceeding the spike; culms tufted, filiform, weak (6′ – 12′ high), rough above, longer than the very narrow leaves. — Bogs and swamps, common.

23. **C. Fraseri,** Andrews. Spike oblong, many-flowered, the fertile portion globose; perigynia ovoid, inflated, abruptly short-pointed, longer than the oblong obtuse hyaline scale; leaves very wide (1′ or more), obtuse, serrulate and wavy on the margins, convolute below, and sheathing the base of the naked smooth culm. — Shady banks of streams on the mountains of North Carolina. — Leaves 6′ – 12′ long, longer than the culm.

24. **C. Jamesii,** Schw.? Spike linear (6″ – 10″ long); sterile flowers 20 – 25; perigynia 1 – 4, ovoid, smooth, 3-nerved, abruptly contracted into a slender compressed rough-edged beak, longer than the ovate white green-keeled scale; leaves linear, flat, abruptly pointed, longer than the bristle-like prostrate culms. — Shady banks, Florida, and westward. — Culms 3′ – 6′ long. Plant whitish.

25. **C. Willdenovii,** Schkr. Sterile flowers 4 – 8; perigynia 6 – 9, oblong, the lower much shorter than the leafy green scale; otherwise like the last. — Mountains of North Carolina, and northward.

* * *Diœcious.*

26. **C. Boottiana,** Benth. Culms slender, naked, rough, shorter than the linear bright-green radical leaves; spikes (rarely 2) many-flowered, purplish, cylindrical, erect; fertile spike dense-flowered; perigynium obovate, obtuse or abruptly short-beaked, ciliate and 2-toothed at the orifice, nerved, pubescent, ciliate-toothed on the angles, shorter and narrower than the oblong-acute or abruptly pointed purple scale. — North Alabama (*Peters*), and westward. — Culms 6′ – 8′ long. Spikes 1′ – 2′ long.

2. *Spikes two or more (rarely solitary).*

* *Culms with a sterile and fertile spike from a terminal leafless sheath, and two or more fertile ones in the axils of the radical leaves.*

27. **C. Baltzellii,** Chapm. Sterile spike rigid, often with a few fertile flowers at the base; fertile spikes 3 – 6, linear-cylindrical, closely many-flowered, one (rarely two) on an erect peduncle which is included in a leafless sheath at the base of the sterile spike, the others on long recurved or spreading radical peduncles, commonly sterile at the summit; perigynia obovate-oblong, pubescent, abruptly short-pointed, as long as the obovate obtuse mucronate reddish brown scale. — Dry sandy soil, Middle Florida. — Leaves all radical, 2″ – 4″ wide, glaucous, very rough above, longer than the culm.

* * *Terminal spike sterile below (often wholly so in Nos. 29 and 41), fertile above, the others chiefly fertile.*

+ *Perigynia inflated, contracted into a long and slender beak.*

28. **C. squarrosa,** L. Spikes 1 – 4, oval, thick (½′ – ¾′), erect, peduncled; perigynia horizontal, obovate, smooth, 3-nerved, abruptly contracted into a long subulate smooth 2-cleft beak, longer than the lanceolate acute scale. — Swamps and meadows, near the mountains, Georgia, and northward. — Culms 8′ – 16′ high, shorter than the linear leaves and bracts.

29. **C. stenolepis,** Torr. Spikes 4-7, the terminal one small, often wholly sterile or fertile, the others cylindrical, erect, dense-flowered, the upper ones approximate and nearly sessile, the lower scattered, on exserted peduncles; perigynia horizontal, contracted into a long and slender 2-cleft beak, shorter than the awn-like scales. — Swamps and meadows, upper districts of Georgia, and westward. — Culms 1°-1½° high, flexuous above, shorter than the broad leaves and bracts.

+ + Perigynia beakless.

++ Spikes approximate, ovoid or cylindrical, dense-flowered, sessile, or on short and erect peduncles: bracts short.

30. **C. Buxbaumii,** Wahl. Spikes 3-4, oblong, the upper one peduncled, the others sessile or nearly so; perigynia whitish, smooth, elliptical, compressed-3-angled, obtuse and emarginate at the apex, commonly shorter than the ovate acute or awn-pointed blackish scale. — Mountains of Georgia, and northward. — Culms 1°-1½° high, rough above, longer than the narrow glaucous leaves.

31. **C. triceps,** Michx. Spikes 2-4 (mostly 3), sessile or nearly so, ovoid or oblong, many-flowered; perigynia pubescent or at length smoothish, ovate, compressed-3-angled, strongly nerved, obtuse and emarginate at the apex, about as long as the oblong mucronate white scale. — Damp soil, Florida, and northward. — Culms erect 1°-1½° high, rough-angled, and, like the narrow leaves, and sheaths, more or less pubescent.

32. **C. Smithii,** Porter. Spikes 3-4, ovoid or oblong, sessile, few-flowered; perigynia smooth, round-pear-shaped, obscurely angled, faintly nerved, contracted into a short and entire point, as long as the oblong obtuse or barely pointed white scale. — Low ground, in the upper districts. — Culms 1° high, very slender. Leaves and sheaths smooth.

33. **C. virescens,** Muhl. Spikes 2-3, cylindrical, short-peduncled, densely many-flowered; perigynia small, pubescent, ovoid, strongly nerved, 3-angled, acute and entire at the apex, as long as the ovate mucronate white scale. — Low grassy meadows, North Carolina, and northward. — Culms 1°-2° high, rough. Leaves and sheaths hairy.

34. **C. Shortiana,** Dew. Spikes 4-5, approximate, erect, cylindrical, densely many-flowered, the lower stalked, all staminate at the base; perigynia round-obovate, nerveless, about the length of the thin ovate scale; culms rigidly erect, mostly shorter than the broadly linear leaves. — Damp ground, Tennessee, and northward. — Culms 1°-3° high. Spikes 1′ long.

++ ++ Spikes remote, linear or cylindrical, rather loosely flowered, on long and mostly drooping peduncles: bracts long and leaf-like: perigynia smooth, somewhat inflated, few and faintly nerved.

35. **C. oxylepis,** Torr. & Hook. Spikes 4-5, linear, all on long bristle-like partly included nodding peduncles, distant; perigynia oblong, acute-angled, emarginate at the pointed apex, longer than the lanceolate rough-pointed white scale. — Low ground, Florida, and westward. — Culms slender, 1½°-2° high, the lower part, like the leaves and sheaths, pubescent.

36. **C. æstivalis,** M. A. Curtis. Spikes 3–5, linear or filiform, loosely flowered, erect, the lowest on nearly exserted peduncles, the upper almost sessile; perigynia oblong, obtuse-angled, obtuse and entire at the apex, twice as long as the ovate obtuse or emarginate scale. — Mountains of North Carolina. — Culms 1°–1½° high, smooth. Lowest sheaths pubescent.

37. **C. gracillima,** Schw. Spikes 3–5, distant, linear, on slender and nodding peduncles; perigynia oblong, obtuse, entire and oblique at the orifice, about twice as long as the oblong obtuse short-awned scale. — Wet meadows, North Carolina, and northward. — Culm 1°–2° high. Spikes 1′–1½′ long, thicker than those of the preceding. Sheaths smooth.

38. **C. Davisii,** Schw. & Torr. Spikes 3–4, remote, oblong-cylindrical, all on slender nearly exserted peduncles, nodding; perigynia ovate-oblong, inflated, round-angled, emarginate at the pointed apex, longer than the oblong awned scale. — Mountains of Georgia (*Muhlenberg*). — Culms 1½°–2° high. Leaves and sheaths more or less pubescent. Spikes rather dense-flowered.

39. **C. miliacea,** Muhl. Spikes 4, linear, all on exserted nodding peduncles, the terminal one often wholly sterile; perigynia yellowish, ovate, compressed-3-angled, nerveless or nearly so, tapering into a spreading slightly emarginate point, as long as the oblong mucronate scale. — Mountains of Georgia (*Torrey*). — Culms weak, 1°–1½° high. Sheaths smooth. Lower perigynia scattered.

* * * *Terminal spikes sterile, the others fertile, or with few sterile flowers at the summit.*

+ *Perigynia small (1″–3″ long), slightly or not at all inflated, obtuse or short-beaked.*

++ *Fertile spikes sessile, ovoid or oblong, dense-flowered: perigynia pubescent, short-beaked or pointed.*

40. **C. filiformis,** L. Sterile spikes 2 or more, slender, long-peduncled; fertile spikes 1–3, distant, oblong; perigynia ovoid, obtuse, 3-angled, densely pubescent, obscurely nerved, abruptly contracted into a short emarginate point, longer than the oblong mucronate brown scale. — Bogs and swamps, South Carolina (*Torrey*). — Culms 2° high, smooth. Leaves filiform, elongated. Bracts leafy, many times longer than the spikes.

41. **C. vestita,** Willd. Sterile spikes 1–2, thick, short-peduncled; fertile spikes 1–2, approximate, ovoid or oblong; perigynia oblong-ovate, 3-angled, densely-pubescent, strongly nerved, tapering into a distinct beak, with a white membranaceous 2-cleft orifice, longer than the oblong mucronate brown scale. — Sandy swamps in the upper districts, and northward. — Culms rigid, acute-angled, 1°–2° high. Leaves short, linear. Bracts short, the upper one shorter than the spikes.

42. **C. dasycarpa,** Muhl. Sterile spike single, short-peduncled; fertile spikes 2–3, approximate, oblong; perigynia woolly, oblong, 3-angled, striate, scarcely beaked, with the orifice entire, twice the length of the ovate barely pointed pale scale; nut stalked. — Shady woods, Florida to South Carolina. — Culms 6′–12′ high, rough-angled. Leaves pubescent.

43. **C. tenax,** Chapm. Culms (10′–15′ high) and rigid channelled leaves rough, but not pubescent; spikes and ovate beaked and less pubescent perigynia larger; nut sessile; otherwise like the preceding, and possibly a stouter form of it. — Dry sand ridges, Middle Florida.

44. **C. Pennsylvanica,** Lam. Sterile spike single; fertile spikes mostly 2, ovoid, approximate, 4–6-flowered, the lower one with a short or scale-like colored bract; perigynia nearly globose, pubescent, abruptly contracted into a short 2-cleft beak, longer than the oblong-ovate dark brown scale. — Dry woods in the upper districts. — Stoloniferous. Culms 1° or less high, shorter than the narrow green leaves.

45. **C. varia,** Muhl. Spikes 2–5, the upper contiguous, the lowest often leafy-bracted; perigynia acuminate at both ends, about the length of the oblong-ovate pale scale. (C. Emmonsii, *Dew.*) — Dry light soil, chiefly in the upper districts. — Culms filiform, commonly longer than the narrow-linear leaves, often stoloniferous.

46. **C. nigromarginata,** Schw. Spikes mostly 3–5, few-flowered, the sterile little exceeding the two contiguous fertile ones; perigynia oval, triangular, slender-beaked, shorter than the black-margined scale; stigmas 3; nut triangular; culms 1′–6′ high, much shorter than the rather rigid linear leaves. — Dry open woods, North Carolina, and westward.

47. **C. Floridana,** Schw. Habit and inflorescence like the preceding; scales slightly or not at all discolored; stigmas 2 or 3; perigynia plano-convex; nut lenticular. — Light dry soil, Florida, and westward.

++ ++ *Fertile spikes linear or cylindrical, remote, all, or the lowest, on distinct and commonly elongated peduncles.*

= *Perigynia striated with numerous fine nerves: sterile spike always single.*

† *Perigynia smooth, nearly terete, obtuse or barely pointed: bracts long and leaf-like: spikes erect.*

48. **C. grisea,** Wahl. Sterile spike short, sessile; fertile spikes 3–4, linear-oblong, rather loosely flowered (4″–8″ long), the upper one nearly sessile; perigynia oblong-ovoid, pointless, somewhat inflated, twice as long as the white ovate rough-awned scale; culms smooth, 1° high; leaves and bracts broadly linear. — Low ground, chiefly in the upper districts.

Var. **angustifolia,** Boott. Sterile spike long-peduncled; fertile spikes mostly 3, linear, few-flowered, very remote, the lowest at the base of the culm; perigynia 4–8, lanceolate-oblong, 3-angled, alternate and 2-ranked, pointless and entire at the apex, longer than the ovate rough-awned scale. — Dry open woods, Florida. — Culms filiform, 8′–12′ high. Leaves and bracts linear. Lowest sheaths dark brown.

49. **C. flaccosperma,** Dew. Spikes 4–5, the sterile short, sessile, the fertile distant, closely many-flowered, leafy-bracted, the lowest long-peduncled; perigynia oblong, obtuse, twice the length of the ovate awnless scale; culms 6′–18′ high; leaves broadly linear. — Rich shaded soil, Georgia, and westward.

50. **C. granularis,** Muhl. Sterile spike short, sessile; fertile spikes 3–4, linear-cylindrical, densely many-flowered, yellowish, the upper one nearly

sessile, the lowest distant and long-peduncled; perigynia small, globose-ovate, contracted into a minute mostly recurved entire or emarginate point, longer than the ovate obtuse or barely pointed scale. — Meadows and banks of streams, Florida, and northward. — Culms 6′–12′ high. Leaves and bracts broadly linear, 3-nerved.

51. **C. conoidea,** Schk. Sterile spike long-peduncled; fertile spikes 2–3, oblong or cylindrical, densely many-flowered, remote; perigynia small, oblong-ovoid, obtuse, striate with impressed nerves, smooth and shining, equalling or the lower shorter than the ovate pointed or short-awned scale. — Mountains of North Carolina, and northward. — Culms 6′–12′ high. Leaves and bracts linear. Spikes ½′–¾′ long, the lowest long-peduncled.

52. **C. tetanica,** Schk. Sterile spike short-peduncled; fertile spikes 1–3, linear-cylindrical, remote, loosely flowered; perigynia obovate, narrowed at the base, contracted into a short bent point, longer than the ovate acute or short-awned scale. — Mountains of North Carolina, and northward. — Culms 1° high. Leaves and bracts narrowly linear.

53. **C. Meadii,** Dew. Sterile spike mostly long-peduncled, slender; fertile spikes 1–3, oblong (4″–8″ long), closely flowered; perigynia obovate, abruptly contracted into the entire orifice, barely longer than the oblong acute broadly margined scale; culm 6′–12′ high; leaves narrow-linear, shorter than the culm. — Mountains of Georgia, and northward.

54. **C. polymorpha,** Muhl. Sterile spikes 1 or 2, short, long-peduncled; fertile spikes 1 or 2, remote, erect; perigynia oblong-ovate, minutely granular, entire at the white oblique orifice, longer than the ovate, mostly obtuse, brownish purple scale; culms 1°–1½° high; leaves short, erect. — Low grassy meadows, North Carolina (*Curtis*), and northward.

55. **C. oligocarpa,** Schk. Sterile spike short-peduncled; fertile spikes mostly 3, loosely 4–8-flowered; perigynia thick, finely striate, oblong, with a straight or slightly spreading point, shorter than the ovate long-awned white scale; style very short; culms 10′–15′ high; leaves narrow-linear. — North Carolina (*Curtis*), and northward.

† † *Perigynia smooth, 3-angled, with a recurved or spreading point: lowest peduncles elongated and often recurved.*

‡ *Bracts leafy: scales white.*

56. **C. laxiflora,** Lam. Sterile spike peduncled, exceeding the bracts; fertile spikes 2–3, remote, linear, loosely 8–12-flowered; perigynia oblong-obovate, tapering into a smooth spreading entire beak, longer than the oblong mucronate scale. — Plant more or less glaucous. Culm 10′–15′ high, usually compressed-3-angled above. Leaves linear or lanceolate, tender. Sheaths smooth.

Var. **striatula.** Culms, leaves, and especially the sheaths, rough; sterile spike sessile or nearly so, shorter than the bracts; fertile spikes 3–5, rather closely 12–20-flowered, the 2–3 upper ones commonly approximate; perigynia obovate, abruptly short and bent-pointed. — Dry open woods and margins of fields; common, and varying greatly in the form of the perigynia and width of the leaves.

57. **C. styloflexa,** Buckley. Sterile spike short-peduncled; fertile spikes 3, oblong, few-flowered, very remote, the lowest on a long and mostly nodding peduncle; perigynia lanceolate or oblong, narrowed at the base, tapering into a spreading rough-angled mostly emarginate beak, longer than the oblong mucronate scale. — Shady swamps, Middle Florida, to the mountains of North Carolina. — Culms filiform, 1° – 1½° high, and, like the sheaths of the linear leaves, roughened downward.

58. **C. digitalis,** Willd. Sterile spike small, sessile, or nearly so; fertile spikes commonly 3, remote, very slender, loosely 5 – 8-flowered, all on long bristle-like peduncles, the lowest near the base of the culm and generally reclining; perigynia alternate, ovoid, with a short and spreading entire point, twice the length of the ovate acute green-keeled scale; leaves linear, green; culms 6′ – 12′ high. — Low ground, common.

59. **C. ptychocarpa,** Steudl. Sterile spike very small, nearly sessile, the fertile mostly 3, closely 6 – 8-flowered, the two upper approximate, nearly sessile, much shorter than the broad foliaceous bracts; the lowest distant, long-peduncled, erect; perigynia nearly thrice the length of the ovate obtuse or barely pointed white scale. (C. digitalis, var., *Flora.*) — Wet shaded banks, Middle Florida. — Culms 3′ – 5′ high, much shorter than the broadly linear glaucous leaves.

‡ ‡ *Bracts sheathing, leafless or nearly so: scales brown or black.*

60. **C. plantaginea,** Lam. Fertile spikes 3 – 4, remote, the lowest at the base of the culm, linear, erect, loosely few-flowered, the peduncles mostly included in the brown leafless sheaths; perigynia oblong-obovate, short-pointed, longer than the ovate acute black scale. — Mountains of North Carolina, and northward. — Leaves all radical, 1′ or more wide, about as long as the slender culm.

61. **C. Caroliniana,** Buckley. Fertile spikes 3, loosely 3 – 6-flowered, remote, all on long bristle-like drooping peduncles, which are partly included in the sheaths of the short bracts; the lowest near the base of the culm: perigynia ovoid, short-pointed, rather longer than the oblong mucronate dark brown scale. — Table Mountain, South Carolina (*Buckley*). — Radical leaves 4″ – 6″ wide, 3-nerved, exceeding the tufted culms.

= = *Perigynia with few and scattered nerves, commonly a little inflated, straight-beaked or pointed: spikes all, or the lowest, on long and mostly nodding peduncles: bracts leafy.*

† *Spikes linear or filiform, loosely flowered: perigynia lanceolate or oblong.*

62. **C. venusta,** Dew. Fertile spikes 3 - 5, linear (1′ – 1½′ long), remote, or the two upper ones approximate and erect; perigynia oblong, acute at each end, rough-hairy, notched at the orifice, twice as long as the oblong obtuse scale. — Low banks of streams, Florida to North Carolina. — Culms 2° – 3° high. Sheaths of the linear leaves very rough.

63. **C. debilis,** Michx. Fertile spikes 3 – 5, remote, filiform, drooping; perigynia alternate, lanceolate, smooth, acute at the base, tapering into a 2-cleft beak, twice as long as the oblong obtuse 1-nerved scale; sheaths

smooth. — Swamps and low grounds, common. — Culms very slender, 1° - 2° high.

64. **C. juncea,** Willd. "Spikes 2 - 4, slender, erect, brownish purple, the sterile one filiform, the fertile loosely flowered, somewhat remote, the lowest on an exserted peduncle; perigynia 3-angled, spindle-shaped, rough at the apex, with the orifice entire; scales ovate, obtuse, and longer than the perigynia, or lanceolate, mucronate, and about equalling them." *Boott.* — Summit of Roan Mountain, North Carolina. — Leaves somewhat bristle-form, shorter than the culm.

† † *Spikes cylindrical or oblong, densely many-flowered: perigynia ovate or roundish.*

65. **C. scabrata,** Schw. Sterile spike short, single; fertile spikes 4 - 5, rather distant, on erect exserted peduncles; perigynia ovate, rough, spreading, with few rather prominent nerves, tapering into a 2-cleft beak, longer than the oblong acute brownish scale. — Shady swamps, South Carolina and Tennessee. — Culms (1° - 1½° high) and broadly linear thin leaves very rough. Bracts leaf-like, destitute of sheaths.

66. **C. Barrattii,** Torr. Sterile spikes 1 - 2, long and rigid; fertile spikes 2 - 3, cylindrical, all on drooping peduncles, commonly sterile at the summit; perigynia yellowish, compressed-3-angled, round-elliptical, slightly roughened, emarginate or entire at the orifice, longer than the oblong obtuse or pointed black scale. — Marshes, North Carolina (*Curtis*), and northward. — Culms 1° - 2° high, rough-angled, longer than the rigid glaucous leaves.

67. **C. verrucosa,** Muhl. Sterile spikes 1 - 3, sessile or short-peduncled, often with fertile flowers variously intermixed, fertile spikes 4 - 10, cylindrical or oblong, the upper ones sessile and erect, the lower long-peduncled and drooping; perigynia glaucous, globose-obovate, 3-angled, strongly nerved or nerveless, abruptly contracted into a short and entire point, about as long as the brown rough-awned scale. — Margins of ponds and rivers, Florida to North Carolina. — Culms 2° - 4° high. Leaves glaucous, setaceously attenuate.

68. **C. Cherokeensis,** Schk. Sterile spikes 2 - 4, slender; fertile spikes 5 - 15, often 2 - 3 from the same sheath, oblong or cylindrical, sterile at the summit, all on long and nodding peduncles; perigynia whitish, oblong, compressed-3-angled, short-beaked, with the orifice membranaceous and obliquely 2-cleft, longer than the oblong acute scale; stigmas elongated. — Banks of the Apalachicola River, Florida, to the mountains of Georgia, and westward. — Plant whitish. Culms 1° - 2° high, smooth, like the linear leaves.

69. **C. microdonta,** Torr. & Hook. "Staminate spikes 3; fertile spikes about 4, exsertly pedunculate, erect, cylindrical, attenuate, and more or less staminiferous at the summit; fruit ovate, compressed, obscurely striate, acute, with a minutely bidentate orifice, scarcely exceeding the broadly ovate acuminate, somewhat cuspidate scale." *Torrey.* — Mississippi (*Bailey*), and westward.

← ← *Perigynia large (3″ – 6″ long), and commonly much inflated, conspicuously nerved, tapering into a conical or long and subulate 2-cleft beak.*

↔ *Sterile spike single: styles persistent, contorted: perigynia smooth: spikes many-flowered (except No. 77).*

70. **C. comosa,** Boott. Fertile spikes 4, cylindrical, approximate, on exserted nodding peduncles (1½′ – 2½′ long); perigynia (2″ long) oblong, spreading or reflexed, tapering into a long subulate deeply 2-cleft beak, with bristly, spreading teeth, longer than the awned scale. — Swamps, Florida, and northward. — Culms stout, 2° – 3° high, rough-angled above. Leaves broadly linear, and, like the bracts, exceeding the culm.

71. **C. hystricina,** Muhl. Fertile spikes 3, oblong or cylindrical, on nodding peduncles; perigynia oblong-ovate, many-nerved, spreading, tapering into a minutely 2-cleft beak, twice as long as the oblong awned scale; nut obovate, smooth. — Swamps, Georgia, and northward. — Culms 1° – 1½° high, rough above, shorter than the leaves and bracts. Spikes 1′ – 1½′ long.

72. **C. tentaculata,** Muhl. Sterile spike nearly sessile; fertile spikes 1 – 3, sessile, approximate, or the lowest remote and short-peduncled, ovate or cylindrical-oblong; perigynia ovate, spreading, few-nerved, the long subulate beak cleft on the inner side, and minutely 2-toothed, twice as long as the lanceolate awned scale; nut ovoid, roughish. — Meadows and low grounds, common. — Culms 1° – 1½° high. Leaves and bracts elongated.

73. **C. gigantea,** Rudge. Fertile spikes 3 – 4, oblong or cylindrical; the upper approximate and nearly sessile, the lowest distant and short-peduncled, erect; perigynia (6″ – 7″ long) widely spreading, strongly many-nerved, tapering from an ovate and obtuse base into a long subulate rough 2-cleft beak, with hispid teeth, twice as long as the oblong awn-pointed scale; nut depressed, 3-angled. — Pine barren ponds, Florida to South Carolina, and westward. — Culms 2° high, smooth, shorter than the broad linear leaves and bracts.

74. **C. lupulina,** Muhl. Fertile spikes 3 – 4, approximate, sessile, or the lowest short-peduncled, erect, oblong, thick (1′ in diameter); perigynia (6″ – 7″ long) erect-spreading, tapering from the ovoid acutish base into a subulate smooth or slightly roughened beak, with smooth and spreading teeth, twice as long as the oblong awn-pointed scale; nut rhombic-oblong. — Deep river swamps, Florida, and northward. — Culms and leaves as in the preceding.

75. **C. Halei,** Carey. Sterile spike slender, long-peduncled; fertile spikes 2 – 3, remote, ovoid or oblong (1′ in diameter), erect, the lowest commonly on a partly exserted peduncle, the others nearly sessile; perigynia large (6″ long), tapering from a greatly inflated and rounded base into a smooth and slender 2-cleft beak, with smooth and spreading teeth, more than twice as long as the oblong acuminate scale; nut rhomboid. — Swamps, Florida to the mountains of Georgia, and westward. — Culms 1° high, smooth and slender, as long as the narrow smooth leaves. Spikes whitish, 1′ – 1½′ long.

76. **C. subulata,** Michx. Sterile spike small; fertile spikes 3 – 4, remote, few-flowered, the lowest on a partly exserted peduncle, erect; perigynia

4 – 6, subulate, smooth, reflexed, the rigid teeth reflexed and appressed to the slender beak, four times as long as the awn-pointed scale. — Deep swamps, Georgia to North Carolina. — Culms smooth, filiform, 1° - 1½° high, longer than the linear leaves.

↔ ↔ *Sterile spike single: style deciduous, straight or nearly so: fertile spikes few-flowered.*

77. **C. folliculata,** L., var. **australis,** Bailey. Fertile spikes 3 – 4, ovoid, remote, 8 – 10-flowered, on erect peduncles, sterile at the summit; perigynia (6″ long) horizontal, lanceolate, tapering into a smooth beak, with erect hispid teeth, one third longer than the lanceolate rough-pointed scale. — Wet margins of streams, Florida to North Carolina. — Culms smooth, 2° high, commonly exceeding the linear flat leaves.

78. **C. turgescens,** Torr. Fertile spikes 2, near or remote, on short included peduncles, ovoid, 8 – 12-flowered; perigynia erect-spreading (4″ long), lance-ovate, strongly nerved, tapering into a smooth 2-cleft beak, with hispid erect teeth, twice as long as the ovate obtuse scale. — Pine barren swamps, Florida to North Carolina. — Culms smooth, 2° – 3° high, longer than the narrow rigid and channelled leaves.

79. **C. Elliottii,** Schw. & Torr. Fertile spikes mostly 3, approximate and nearly sessile, or the lowest remote and long-peduncled, globose, 8 – 16-flowered, sterile at the apex; perigynia small (3″ long), oblong-ovate, compressed, spreading, few-nerved, tapering into a short smooth beak, with erect hispid teeth, twice as long as the ovate obtuse scale. — Boggy margins of pine barren streams, Florida to North Carolina. — Culms 1° – 2° high, rough above, longer than the narrowly linear leaves.

80. **C. intumescens,** Rudge. Fertile spikes 2 – 4, approximate, the upper sessile, the lower peduncled, globose, 10 – 15-flowered; perigynia large (6″ long), spreading, tapering from a rounded and greatly inflated base into a short and smooth 2-cleft beak with hispid teeth, twice as long as the ovate acuminate scale. — Shady swamps, Florida, and northward. — Culms 1° – 1½° high, rough above, shorter than the broadly linear deep green leaves and bracts.

81. **C. Grayii,** Carey. Fertile spikes 2, globose, closely 15 – 30-flowered; perigynia sparsely pubescent (in ours), reflexed; culms tall (2° – 3° high); otherwise like the last. — Swamps near Rome, Georgia, and northward.

↔ ↔ ↔ *Sterile spikes 2 or more: fertile spikes many-flowered.*

= *Perigynia pubescent.*

82. **C. trichocarpa,** Muhl. Sterile spikes about three, linear, long-peduncled; fertile spikes 2, cylindrical, on short and mostly included peduncles; perigynia thin, rough-hairy, tapering from a rounded ovate base into a rather slender rough beak, with long acute teeth, longer than the oblong acute awnless scale. — Deep marshes, Georgia, and northward. — Culms 2° – 3° high, rough above. Leaves linear, elongated.

83. **C. striata,** Michx. Sterile spikes 2 – 4, long-peduncled; fertile spikes 1 – 4 (mostly 2), remote, sessile, or the lowest long-peduncled, oblong or cylindrical; perigynia thick, ovate, pubescent above the middle, contracted

into a short and whitish 2-cleft or emarginate beak, longer than the oblong acute scale. — Pine barren swamps, Florida, and northward. — Culms 1½° – 2° high. Leaves narrowly linear, keeled, rather rigid. Perigynia occasionally nearly smooth.

= = *Perigynia smooth.*

84. **C. riparia,** Curtis. Sterile spikes 4 – 6, dark brown; fertile spikes 2 – 3, oblong-cylindrical, sterile at the summit (1½′ – 2′ long), on erect peduncles; perigynia ovate-oblong, obscurely nerved, tapering into a smooth 2-cleft beak, longer than the oblong brown awned scale. — Deep marshes, common. — Culms stout, 2° - 3° high, rough above, shorter than the broad (½′) smoothish and glaucous leaves and bracts.

85. **C. bullata,** Schk. Sterile spikes 2 – 3, long-peduncled; fertile spikes 1 – 2, oblong or oval (1′ long), sessile, or on very short exserted peduncles; perigynia globose-ovate, much inflated, strongly nerved, smooth and shining, slender-beaked, longer than the oblong acute scale. — Swamps, South Carolina, and northward. — Culms 1° – 1½° high, shorter than the linear leaves and bracts.

ORDER 162. GRAMINEÆ. (GRASS FAMILY.)

Chiefly herbs. Stem (*culm*) mostly hollow and with closed joints Leaves alternate, 2-ranked, narrow and entire. Sheaths open, or split on one side, and usually prolonged into a membranaceous or fringed appendage (*ligula*) at the base of the blade. Flowers in spiked or panicled spikelets, consisting of 2-ranked imbricated bracts or scales (*glumes*), of which the 1 or 2 lower ones are empty, the others (1 or more) enclosing a smaller and thinner one (*palea* or *palet*), a 1-celled 1-ovuled ovary, and 1 – several stamens, are the *flowering glumes*, forming the *floret*. Perianth none, or consisting of 2 – 3 minute hypogynous scales (*lodicules*). Anthers versatile, 2-celled. Styles 2 – 3-parted, with hairy or plumose stigmas. Fruit a caryopsis (*grain*). Embryo placed on the outside and near the base of mealy albumen. — Root fibrous.

Synopsis.

SERIES I. Spikelet jointed with the pedicel below the lowest glume.

TRIBE I. **PANICEÆ.** Spikelets with a single terminal perfect awnless flower, or with a second imperfect one in the glume below. Floret coriaceous in fruit.

* Spikelets without a bristly or spiny involucre.

← Spikelets in 2 – 4 rows on 1-sided lateral and terminal spikes.

1. REIMARIA. Glumes 2. Spikelets lanceolate, acute. Culms creeping.
2. PASPALUM. Glumes 3. Spikelets mostly ovate or orbicular, plano-convex, in 2 – 4 rows.
3. ERIOCHLOA. Glumes 3. Spikelets lanceolate, with a callous ring at the base.
4. OPLISMENUS. Glumes 4, the lower awned. Spikes short and distant.

← ← Spikelets variously panicled (except § 1 in No. 7).

5. ANTHÆNANTIA. Glumes 3. Spikelets alike, in a contracted panicle, villous.

6. AMPHICARPUM. Glumes 3. Spikelets of 2 kinds, one in a terminal panicle, the other larger, on a solitary subterranean peduncle.
7. PANICUM. Glumes 4, the lowest smaller, the third staminate or neutral.

* * Spikelets subtended by a bristly or spiny involucre.

8. SETARIA. Involucre of 1-several bristles persistent on the pedicel.
9. CENCHRUS. Involucre bur-like, of several barbed spines partly united, and enclosing 1-3 spikelets.
10. PENNISETUM. Spikelets enclosed in an involucre of fine often plumose bristles.

* * * Spikelets sunk in excavations of the thick rachis.

11. STENOTAPHRUM. Culms creeping. Flowering branches short and erect.

TRIBE II. **ORYZEÆ.** Spikelets perfect or unisexual, 1-flowered. Empty glumes none (except No. 16). Stamens mostly 6 or more.

* Spikelets perfect.

12. LEERSIA. Spikelets compressed, mostly ciliate. Stamens 1-6.

* * Spikelets unisexual.

13. LUZIOLA. Staminate and pistillate spikelets in separate panicles. Stamens 6-11.
14. HYDROCHLOA. Spikelets in simple few-flowered axillary and terminal spikes. Stamens 6.
15. ZIZANIA. Staminate and pistillate spikelets in the same panicle. Stamens 6.
16. PHARUS. Spikelets in pairs, unequal, the smaller hexandrous, the larger pistillate.

TRIBE III. **MAYDEÆ.** Spikelets unisexual, the pistillate in excavations of the rachis of the jointed spike.

17. ROTTBŒLLIA. A pistillate and staminate spikelet at the base of each joint of the spike.
18. MANISURIS. A pistillate spikelet at the base, and a neutral one at the top of each joint of the spike.
19. TRIPSACUM. Spikes pistillate at the base, staminate above.

TRIBE IV. **ANDROPOGONEÆ.** Spikelets in pairs or threes on each joint of the rachis of the spike or branch of the panicle, one sessile and perfect, the others pedicelled, staminate or neutral (rarely perfect). Glumes 4, the two lower larger, empty, and more rigid, the third staminate or neutral, the floret hyaline and mostly awned.

* Spikelets in short-jointed spikes.

20. ELIONURUS. Spikes single, long-peduncled. Spikelets awnless.
21. ANDROPOGON. Spikes single, digitate, or panicled, mostly white-hairy. Spikelets awned. Lowest glume 2-keeled on the back.
22. HETEROPOGON. Spikes clustered, 1-sided. Sterile spikelet 3-androus, its glumes flat, twisted. Floret long-awned.

* * Spikelets panicled.

23. IMPERATA. Sessile and pedicelled spikelets both perfect and awnless.
24. ERIANTHUS. Sessile and pedicelled spikelets both perfect and awned, with an involucral tuft at the base.
25. SORGHUM. Spikelets in pairs or threes, only the sessile one perfect and awned.

SERIES II. POACEÆ. Pedicel jointed above the lowest glume.

TRIBE V. **PHALARIDEÆ.** Glumes 5, only the uppermost fertile, the two lower empty, the middle ones staminate, neutral, or rudimentary.

26. PHALARIS. Middle glumes rudimentary. Floret triandrous.
27. ANTHOXANTHUM. Middle glumes empty, awned. Floret diandrous.
28. HIEROCHLOE. Middle glumes triandrous. Floret diandrous.

Tribe VI. AGROSTIDEÆ. Spikelets 1-flowered, rarely with a rudiment or second flower above. Glumes 3, the two lower empty. Palea rarely wanting. Inflorescence panicled.

* Glumes membranaceous or chartaceous.

+ Empty glumes united below, conduplicate.

29. ALOPECURUS. Flowering glume dorsally awned. Inflorescence spiked. Palea none.

+ + Glumes separate, convex or keeled.

30. SPOROBOLUS. Spikelets awnless. Flowering glume 1-nerved, longer than the unequal empty ones.

31. AGROSTIS. Spikelets mostly awned. Flowering glume 3-5-nerved, thin, shorter than the nearly equal empty ones. Palea small or none.

32. POLYPOGON. Empty glumes long-awned. Panicle spike-like.

33. CINNA. Spikelets flattened. Flowering glume awned below the apex. Stamen 1.

34. CALAMAGROSTIS. Spikelets 1-flowered, and often with the pedicel of a second flower. Floret surrounded by a tuft of long hairs.

* * Flowering glume awned at the tip (except No. 35) of a firmer texture, closely investing the grain.

35. THURBERIA. Flowering glume awned below the tip.

36. STIPA. Flowering glume with a single long twisted awn.

37. ARISTIDA. Flowering glume triple-awned.

38. MUHLENBERGIA. Empty glumes unequal. Floret hairy at the base, mucronate or straight awned.

39. BRACHYELYTRUM. Empty glumes very small. Floret long-awned. Stamens 2.

Tribe VII. AVENEÆ. Spikelets 2-several-flowered, the terminal one mostly rudimentary. Rachis or base of the flowers often bearded. Flowering glume awned on the back or below the apex. Spikelets panicled.

* Flowers perfect, or the uppermost rudimentary.

40. AIRA. Spikelets 2-flowered. Flowering glume 2-cleft.

41. DESCHAMPSIA. Spikelets 2-flowered, and with a hairy rudiment. Flowering glume truncate, toothed.

42. TRISETUM. Spikelets 2-several-flowered. Flowering glume compressed, keeled, awned.

43. DANTHONIA. Spikelets 2-several-flowered. Flowering glume rigid, 2-cleft, the 3 middle nerves united into a twisted awn.

* * Spikelets 2-flowered, one perfect, the other staminate.

44. HOLCUS. Upper flower staminate and awned. Glumes keeled.

45. ARRHENATHERUM. Lower flower staminate and long-awned. Glumes concave.

Tribe VIII. CHLORIDEÆ. Spikelets 2-several- (rarely 1-) flowered, in 2 rows in racemose or digitate (rarely solitary) spikes. Upper flowers imperfect.

* Spikelets strictly 1-flowered, awnless.

46. SPARTINA. Spikes racemed. Spikelets flat. Glumes keeled.

* * Spikelets 2-3-flowered, the lowest flower perfect.

47. GYMNOPOGON. Spikelets linear, scattered. Flowering glume and rudiment awned. Spikes racemed, filiform.

48. BOUTELOUA. Spikes short, dense, racemed. Flowering glume 3-toothed.

49. CHLORIS. Spikes digitate. Spikelets roundish. Flowering glume mucronate.

50. CYNODON. Spikes digitate, slender. Flowering glume awnless. Culms creeping.

* * * Spikelets 4-5-flowered, only one of the middle ones perfect.

51. CTENIUM. Spike solitary. Flowering glume stout-awned on the back.

* * * * Spikelets several-flowered, the lower flowers perfect.

52. ELEUSINE. Spikes digitate. Spikelets crowded or imbricate.

53. **LEPTOCHLOA.** Spikes racemose, filiform. Flowering glume awnless.

54. **DIPLACHNE.** Spikes racemose. Flowering glume mucronate or awned.

TRIBE IX. **FESTUCEÆ.** Spikelets panicled, few-many-flowered, the flowers all perfect, or the uppermost, and rarely the lowest imperfect or abortive. Glumes membranaceous or rarely indurated, awnless, or short-awned at or near the tip.

* Flowers perfect, or the uppermost abortive.

+ Flowering glumes 2-cleft and awned at the apex.

55. **TRIODIA.** Spikelets few-flowered. Nerves of the glumes hairy, excurrent.

56. **TRIPLASIS.** Spikelets 3-flowered. Flowering glume and palea fringed, the mid-nerve of the glume extended into a bearded awn.

57. **BROMUS.** Spikelets large, few-many-flowered. Flowering glume rounded on the back, and awned below the 2-cleft apex.

+ + Flowering glumes entire, awnless (except in No. 58).

++ Glumes obtuse or rounded on the back.

58. **FESTUCA.** Spikelets mostly terete. Flowering glumes rigid, often awned at the tip.

59. **MELICA.** Spikelets short and thick, few-flowered, the upper flowers imperfect, convolute. Glumes 5-nerved, obtuse, scarious-margined.

60. **GLYCERIA.** Spikelets terete or flattish. Flowering glume 7-nerved, scarious at the tip.

61. **DIARRHENA.** Spikelets few, several-flowered. Flowering glume coriaceous, 3-nerved, acute. Culms nearly leafless.

++ ++ Glumes keeled on the back.

62. **DACTYLIS.** Spikelets in dense 1-sided clusters. Glumes awn-pointed, ciliate on the keel.

63. **EATONIA.** Spikelets 1-3-flowered. Lower glume narrow, the upper 3-nerved, obovate, enclosing the florets.

64. **POA.** Spikelets few-flowered. Flowering glume thin, 5-nerved, scarious on the margins, commonly woody below.

65. **ERAGROSTIS.** Spikelets few-many-flowered, compressed. Flowering glume 3-nerved, acute. Paleæ persistent.

* * Lower flowers imperfect.

66. **UNIOLA.** Spikelets broad and flat. Glumes rigid, compressed, the 3-6 lower ones empty.

67. **PHRAGMITES.** Spikelets villous, 3-6-flowered. Lowest flower triandrous.

* * * Flowers diœcious.

68. **DISTICHLIS.** Spikelets large, flat, many-flowered. Glumes rigid, rounded on the back.

69. **MONANTHOCHLOË.** Spikelets single, terminal, 3-5-flowered. Leaves very short and rigid.

TRIBE X. **HORDEÆ.** Spikelets 1-several-flowered, sessile on opposite sides of the jointed rachis of the terminal spike. Empty glumes 1-2, rigid, rarely wanting. Uppermost flowers imperfect or abortive.

* Spikelets solitary at each joint of the rachis.

70. **LOLIUM.** Spikelets placed edgewise on the rachis. Empty glume one.

71. **AGROPYRUM.** Spikelets placed flatwise on the rachis. Empty glumes two.

* * Spikelets 2-4 at each joint of the rachis.

72. **HORDEUM.** Spikelets 3 at each joint, 1-flowered, the lateral ones sterile.

73. **ELYMUS.** Spikelets 2-4 at each joint, 1-several-flowered. Empty glumes 2, collateral.

74. **ASPRELLA.** Spikelets 1-3 at each joint. Empty glumes none.

TRIBE XI. **BAMBUSEÆ.** Spikelets few-many-flowered. Empty glumes 2-several. Flowering glumes awnless.

75. ARUNDINARIA. Culms tall and woody. Leaves jointed at the base, persistent. Spikelets racemed or panicled.

1. REIMARIA, Fluegge.

Inflorescence as in Paspalum, but the sessile lanceolate spikelets consisting of only one empty glume, and a membranous fertile floret. Stamens 2. Grain enclosed.

1. **R. oligostachya,** Munro. Culms ascending from a creeping base, 1°-2° long, branching; leaves linear, attenuate; spikes 3-4, filiform, at length refracted, 1′-2′ long; spikelets acute, appressed to the flexuous rachis in two rows. — Wet banks, East Florida.

2. PASPALUM, L.

Spikelets usually ovate or orbicular, plano-convex, 1-flowered, borne in 2-4 rows in unilateral spikes or racemes, these terminal, or scattered along the naked summit of the culm. Empty glumes 2, thin; fertile floret coriaceous. Stamens 3. Grain enclosed. — Mostly perennial grasses, with flat leaves, and long-peduncled inflorescence.

§ 1. *Palet of the floret facing the rachis of the spike.*

* *Culms (branches) erect from a creeping base, 1-2-jointed: spikes 2-4, in pairs or approximate, filiform: spikelets ovate-lanceolate, acute, alternately appressed to the sides of the rachis: glumes longer than the floret.*

1. **P. furcatum,** Flügge. Culms 1°-2° high, 2-jointed; leaves 3″-5″ wide, obtuse; peduncles 2-4 from the upper sheath, long and slender, and often a single short one from the lower; spikes mostly in pairs, 2′-4′ long; spikelets 2″ long. (P. digitaria, *Flora.*) — Wet ground in the lower districts.

2. **P. platycaule,** Poir. Culms ½°-1° high, 1-jointed; leaves 1″-2″ wide, obtuse; peduncles 2-7 from the sheath; spikes oftener 3, very slender, 1′ long; spikelets barely 1″ long, slightly pubescent. — Low ground, Florida to Mississippi.

§ 2. *Palet of the floret facing outward.*

* *Spikes approximate or in pairs, terminal,* or *solitary or axillary.*

3. **P. distichum,** L. (JOINT GRASS.) Culms 1°-2° long from a creeping base; leaves glaucous, flat, linear, acute, 3′-6′ long, 2″-3″ wide, the sheaths fringed; spikes 2-4, approximate, 1′-1½′ long; spikelets in 2 (rarely 3-4) rows, ovate-oblong, acute, often more or less pubescent. — Ditches and damp ground, common.

4. **P. vaginatum,** Swartz. Glabrous; culms diffusely creeping, short-jointed, the clustered branches, ½°-1° high; leaves narrow-linear, attenuate to a filiform point, concave or folded, 1′-4′ long, their short dilated sheaths mostly imbricated; peduncles short, single; spikes in pairs, 1′ or less long; spikelets in 2 rows, lanceolate, acute, the upper glume mostly undulate. — Var. REIMARIOIDES. Every way larger, 1°-3° long, spikes often in threes, 2′ long; spikelets ovate-lanceolate, 1½″ long. — Saline marshes along the coast, Florida, and westward.

5. **P. conjugatum,** Berg. Smooth and branching (2° long); leaves thin, linear; spikes 2 – 3, flat, the two terminal ones conjugate; spikelets minute, in two rows, ovate, long-fringed. — New Orleans (*Dr. Hale*). Introduced.

6. **P. ciliatifolium,** Michx. Culms 1° – 2° high; leaves undulate, ciliate, smooth or hairy like the sheaths, 5′ – 12′ long, 6″ – 10″ wide; spikes 2 – 4 in a terminal raceme, or solitary and axillary, closely flowered, 2′ – 4′ long; spikelets in pairs, roundish, 1″ – 1½″ long. — Cultivated ground, common. July – Sept.

Var. **dasyphyllum.** Leaves and sheaths villous; spikes mostly 3, the axillary ones included; spikelets mostly single. (P. dasyphyllum, *Ell.*) — With the type.

7. **P. setaceum,** Michx. Culms slender, 1° – 2° high; leaves and sheaths generally villous; spikes solitary, long-peduncled, the axillary ones short-peduncled or included; spikelets single, ½″ long. — Dry sandy soil. July – Sept.

8. **P. debile,** Michx.? Mostly glabrous; culms filiform, 2° – 3° high; leaves 3′ – 6′ long, 3″ – 5″ wide; spikes mostly solitary, filiform, all on long (6′ – 10′) setaceous peduncles, these often 2 or more from each sheath; spikelets in pairs, ½″ long. (P. longepedunculatum, *Leconte?*) — Dry sandy soil along the coast, Georgia and Florida.

9. **P. monostachyum,** Vasey. Glabrous; culms strictly erect, 2° – 3° high, simple; leaves narrow, erect, rigid, convolute, the lower 1° – 1½° long; spike solitary, erect, long-peduncled, 6′ – 8′ long; spikelets imbricated in two rows, oblong-oval, 1½″ long. — South Florida, and westward.

* * *Spikes 3 – 12 (rarely 2 or numerous), in a terminal raceme.*

+ *Rachis of the spike filiform: spikelets distinctly pedicelled.*

10. **P. racemulosum,** Nutt. Spikes 2 – 3, slender, erect (4′ long); spikelets single or by pairs, obovate, distant on the filiform and somewhat flexuous rachis, distinctly pedicelled; glumes smooth, obtuse, 7-nerved; culms simple, erect (2° – 3° high); leaves long, linear, keeled, glaucous, sprinkled with long white hairs. — Dry sandy soil, Florida to North Carolina, and westward. August – Sept. ♃.

+ + *Rachis of the spike flat or triangular: spikelets short-pedicelled.*

= *Spikelets a line, or less, long.*

11. **P. purpurascens,** Ell. Annual, nearly glabrous; culms erect or ascending, branching, 1° – 3° long; leaves thin, broadly linear, 6′ – 12′ long, the sheaths often purple; spikes 2 – 12 (fewer on the branches), 2′ – 3′ long; spikelets 1″ long, oval or roundish, crowded in 3 – 4 rows under the broad rachis; glumes 5-nerved. — Low ground in the middle and lower districts.

12. **P. plicatulum,** Michx. Perennial, glabrous; culms simple, slender, 2° – 3° high; leaves long, linear; spikes 3 – 5, distant, 2′ long; spikelets oval, in 3 rows under the narrow rachis, 1″ long; second glume plicate within the pale thickened margins. — Georgia, Florida, and westward.

13. **P. cæspitosum,** Flügge. Culms slender, 1° – 1½° high; leaves narrow-linear, ciliate; spikes 3 – 4, filiform, 1′ long; spikelets in three rows,

elliptical, ⅓″ long; glumes 3-nerved, minutely pubescent and granular. (P. Blodgettii, *Flora.*) — South Florida.

14. **P. Drummondi,** Vasey. Culms 2° – 4° high, branching below; leaves broadly linear, 6′ – 10′ long; spikes 3 – 4, 3′ – 4′ long; spikelets in 2 – 3 rows, oval, 1″ long, pubescent and granular. — South Florida (*Vasey*), and westward.

15. **P. virgatum,** L. Culms 3° – 5° high; leaves long, 3″ – 4″ wide; spikes numerous (20 or more), 2′ – 3′ long, the lower mostly germinate; rachis slender; spikelets 1″ long, in 4 rows, ovate; glumes acute, hairy along the margin. — Mississippi, and westward.

= = *Spikelets exceeding a line in length.*

16. **P. præcox,** Walt. Very smooth and somewhat glaucous, or the lower leaves and sheaths hairy; culms simple, slender, 2° – 4° high; leaves long and narrow; spikes 3 – 6, 1′ – 3′ long, bearded at the base; spikelets in 2 – 3 rows, orbicular, flat; glumes 3-nerved. — Low pine barrens. May – Oct.

17. **P. læve,** Michx. Mostly glabrous; culms simple, 2° – 3° high; leaves flat, 2″ – 3″ wide, of varying length; spikes 2 – 5, slender, 2′ – 4′ long, bearded in the axils; spikelets in 2 rows, orbicular, 1¼″ long; glumes 5-nerved. — Moist ground, common.

18. **P. difforme,** Leconte. Culms 2° – 3° high, from creeping rootstocks; leaves broadly linear; spikes 2 – 4, 2′ – 3′ long; spikelets in 2 – 3 rows, oblong-oval, 1½″ long, glabrous. — Low ground near the coast, North Carolina, and westward.

19. **P. Floridanum,** Michx. Culm stout, erect, 2° – 4° high; leaves rigid, broadly linear, 1° – 2° long, smooth and glaucous, or the lowest densely villous; spikes 3 – 5, 2′ – 4′ long; spikelets in 2 – 3 rows, oval or roundish, about 2″ long; glumes glabrous. — Damp or dry soil in the lower districts.

20. **P. dilatatum,** Poir. Culms stout (3° – 4° high); leaves flat, linear-lanceolate, smooth; spikes 4 – 6, racemose; spikelets in 4 rows, ovate, acute, villous on the margins, much wider than the flat rachis; glumes 5-nerved, longer than the roundish floret. — Alabama, New Orleans, and westward. Introduced.

21. **P. pubiflorum,** Rupr., var. **glabrum,** Vasey. Culms stout, erect from a creeping base, 2° – 3° high; leaves spreading, 6′ – 9′ long, 4″ – 6″ wide, flat; spikes 3 – 6, thick, spreading, 2′ – 3′ long; rachis broad and flat; spikelets in 3 – 4 rows, barely more than 1″ long, oblong, obtuse, smooth or pubescent. — Tennessee, and westward.

22. **P. giganteum,** Baldw. Culms very stout, 4° – 6° high; leaves 1° – 2° long, 1′ wide, papillose-ciliate on the margins; spikes 3 – 4, 5′ – 8′ long, distant, spreading; spikelets in 2 – 3 rows, about 2″ long, oval, acute. — East Florida. Rare.

+ + + *Rachis of the spikes broad, membranous, concave, covering the minute spikelets: culms branching, creeping, or floating: spikelets in 2 rows.*

23. **P. fluitans,** Kunth. Culms mostly floating; leaves lanceolate, 4′ – 6′ long; spikes numerous; spikelets pubescent, concealed under the rachis. — Along rivers in still water.

24. **P. Walterianum,** Schultes. Culms creeping; leaves linear, 1′–2′ long; spikes 3–6; spikelets glabrous, partly concealed under the rachis. — Low muddy banks, North Carolina, and westward.

3. ERIOCHLOA, HBK.

Inflorescence as in Paspalum, but the spikelets (in ours) 2-flowered, the lower flower staminate, and the glume of the floret tipped with a short pubescent awn. Pedicel of the spikelets thickened above the joint.

1. **E. mollis,** Kunth. Culms stout, 4°–6° high, simple or branching; leaves 1°–1½° long, flat, widening upwards; panicle downy; spikes or racemes 8–10, 2′–4′ long; spikelets in 2 rows under the filiform rachis, ovate-lanceolate, acute, appressed-pubescent. — Var. LONGIFOLIUM (E. longifolium, *Vasey*), is lower (2°–3° high) and more slender; leaves narrower. — Coast of Florida to South Carolina, in sandy soil.

4. OPLISMENUS, Beauv.

Panicle composed of short cluster-like few-flowered distant 1-sided spikes; glumes nearly equal, unequally (the lowest longer) awned.

1. **O. setarius,** L. Culms ascending from a long creeping base, slender, branching; leaves ovate-lanceolate, thin, 1′–2′ long; spikes about 5, 5–8-flowered. (Panicum hirtellum, *S. Flora*) — Low shady woods, North Carolina to Mississippi, near the coast.

5. ANTHÆNANTIA, Beauv.

Spikelets single, oblong or obovate, loosely racemose on the erect branches of the contracted terminal panicle, 2-flowered, the lower flower staminate or neutral; empty glumes strongly 5-nerved, very villous, as long as the coriaceous acute floret. Stamens 3. — Perennial grasses, with simple, erect culms and linear leaves.

1. **A. villosa,** Benth. Culms smooth; leaves linear-lanceolate, strongly nerved, fringed on the margins, the lower ones widely spreading; panicle racemose; spikelets obovate; sterile flower 3-androus; anthers and stigmas yellow. (Aulaxanthus ciliatus, *Ell.*) — Dry gravelly soil, Florida to North Carolina. July–August. — Culms 2°–3° high. Leaves and spikelets pale.

2. **A. rufa,** Benth. Leaves erect, linear, smooth, elongated; sterile flower neutral; anthers and stigmas purple; otherwise like the preceding. (Aulaxanthus rufus, *Ell.*) — Pine barren swamps, Florida to North Carolina. Sept. — Leaves and spikelets purplish.

6. AMPHICARPUM, Kunth.

Perennial flat-leaved grasses, with the spikelets nearly as in Panicum, but of two kinds; one perfect, but rarely fruitful, disposed in a simple terminal panicle or raceme; the other larger, pistillate or perfect, and borne at the summit of long runner-like radical peduncles. Lower glume minute or wanting.

1. **A. Purshii,** Kunth. Culms tufted, erect from fibrous roots, naked above; leaves lanceolate, rather thin, clothed, like the sheaths, with spreading rigid hairs; upper flowers in a strict panicle; those at base of the culm perfect; grain ovoid or oblong, terete. — Low sandy pine barrens, Georgia, and northward. Sept. — Culms 1° - 3° high. Glumes of the upper flowers 5 nerved, of the lower one white, many-nerved.

2. **A. Floridanum,** Chapm. Culms subterraneous, diffusely creeping; flowering branches erect (1° - 3° high), branching; leaves linear-lanceolate, rigid, smooth; sheaths fringed on the margins; upper spikelets abortive, panicled or racemed, oblong (3″ long), acute; glumes 5-nerved; grain compressed-globose, pointed. — Sandy pine barrens, Florida. Sept. - Oct.

7. PANICUM, L. PANIC GRASS.

Inflorescence spiked, racemose, or panicled. Spikelets 2-flowered, naked (no involucre). Empty glumes 2 or 3, herbaceous; the lowest smaller, often minute, or occasionally wanting. Lower flower staminate or neutral; the palet, when present, small and hyaline. Upper flower perfect, coriaceous, awnless, enclosing the free grain. Stamens 3.

§ 1. DIGITARIA. — *Inflorescence spiked, digitate: spikelets 2 - 3 together, imbricated on one side of the slender rachis: lower flower neutral: glumes shorter than the floret: mostly annuals.*

1. **P. sanguinale,** L. (CRAB-GRASS.) Culms ascending from a diffusely creeping base; leaves thin, spreading, the lower part, like the sheaths, hairy; spikes 5 - 10, digitate and alternate, 3′ - 5′ long, spreading; spikelets oblong, pointed; glumes hairy on the margins. — Cultivated grounds and waste places everywhere. May - Oct.

2. **P. filiforme,** L. Culms erect, sparingly branched (2° - 3° high); leaves linear, erect, and, like the sheaths, hairy; spikes 2 - 5, alternate, erect, filiform, 2′ - 10′ long; spikelets oblong, acute, scattered. — Dry sandy soil, common. August - Sept.

3. **P. glabrum,** Gaudin. Glabrous or nearly so; culms branching below, 6′ - 12′ high; leaves 1′ - 2′ long; spikes 2 - 4, digitate, 1′ - 2′ long; spikelets ovoid. — Cultivated ground. Introduced.

4. **P. serotinum,** Michx. Perennial, creeping, much branched; leaves short (1′ long), lanceolate, villous, like the sheaths; spikes mostly 5, digitate; spikelets minute. — Fields and roadsides, Florida to North Carolina.

§ 2. PANICUM proper. — *Glumes awnless, the 2 lower very unequal, empty; spikelets panicled or racemed.*

* *Panicle simple, composed of short 1-sided spike-like branches racemose at the summit of the culm; spikelets mostly longer than their pedicels.*

5. **P. Chapmanii,** Vasey. Culms slender, erect, 1½° - 2° high; leaves narrow-linear; branches 4 - 12, remote, 3 - 6-flowered, ½′ long; rachis flexuous, bristle-like at the apex; spikelets oblong, 1″ long; lowest glume roundish, nearly half as long as the spikelet. (P. tenuiculmum, *Flora.*) — South Florida.

6. **P. Curtisii,** Chapm. Panicle slender, spike-like (6 – 8′ long), the appressed lower branches remote; spikelets ovate-lanceolate; glumes slightly keeled, the upper 5-nerved, twice as long as the lower one, and rather shorter than the acutish floret; sterile flower 3-androus; culms and smooth linear-lanceolate leaves rigid; sheaths smooth or hairy. — Ponds and swamps, Florida to North Carolina. — Culms 3° – 4° high, often rooting at the lower joints.

7. **P. prostratum,** L. Culm creeping, 1° – 2° long; leaves 1′ – 2′ long, ovate-lanceolate, ciliate and clasping at the base; panicle short, composed of 5 – 9 short closely-flowered branches; spikelets less than 1″ long, ovate, acute; glumes longer than the mucronate floret. — Low ground, Mobile and New Orleans.

8. **P. paspaloides,** Pers. Culms 2° – 3° high from a creeping base; leaves narrow, 6′ – 10′ long; panicle narrow, the numerous branches 1′ or less long, appressed; spikelets in 2 rows; lowest glume truncate, the others as long as the floret. — South Florida.

9. **P. fuscum,** Swartz. Culms 1° – 2° high, branching; leaves linear, 3″ – 5″ wide; panicle 4′ – 5′ long, the branches scattered, single, erect; spikelets obovate, acute; glumes reticulate, as long as the finely rugulose floret. — South Florida, and westward.

Var. **fasciculatum,** Griseb. Culms stouter, 2° – 3° high; leaves larger, 6″ – 8″ wide; branches of the panicle more numerous and crowded, the lower clustered. — South Florida.

10. **P. leucophæum,** HBK. Culms tall, branching; leaves broadly linear, bearded at the throat (1° long); panicle contracted, racemose (10′ – 15′ long), the branches erect; spikelets scattered on the slender rachis, lanceolate, silky-pilose; lower glume minute or wanting, the second linear, 3-nerved, shorter than the floret; the third longer, 5-nerved. — South Florida (*Garber*).

* * *Panicle compound, the spikelets racemose along its ultimate slender branches, singly, or in cluster-like racemes, longer than their pedicels.*

+ *Root annual.*

11. **P. sparsiflorum,** Vasey. Culms weak, diffusely branched; leaves linear; panicle simple, the few elongated scattered branches bearing 2 – 4 oblong-obovate acute spikelets near the summit; glumes papillose-hispid, the second one 5-nerved, longer than the pointed granular-roughened floret; the lower minute, obtuse. (P. angustifolium, *Flora.*) — Mississippi ! and westward. — Culms 1° – 2° long. Spikelets 1½″ long.

12. **P. verrucosum,** Muhl. Glabrous; culms very slender, 1° – 4° long, branching; leaves linear, 3′ – 6′ long; panicles diffusely branching; spikelets scattered on the ultimate setaceous branches, ½″ long; glumes roughened with fine warts, the lowest minute. — Wet ground, North Carolina, and westward.

13. **P. proliferum,** Lam. Glabrous; culms thick and succulent, ascending, geniculate, 1½° – 3° high; leaves broadly linear, ½° – 2° long; panicles lateral and terminal, at length diffuse; spikelets approximate along the setaceous branches, oblong, acute; glumes longer than the acute floret, the lowest broad and clasping. (P. geniculatum, *Ell.*, a large form, 3° – 6° high,

with leaves 2° long. P. amplectens, *Chapm.* in Bot. Gazette, a slender form, with narrow (1″ wide) setaceously pointed leaves.) — Wet ground, common.

14. **P. hians,** Ell. Panicle small, the few scattered spreading branches naked below; spikelets in small dense clusters, ovate; upper glume 5-nerved, 3-4 times longer than the lower; sterile flowers neutral, longer than the floret; palet rigid, obovate, involute, gaping at the apex; culms slender (6′-18′ high); leaves linear, smooth. — Low grounds in fields and along roads, Florida to North Carolina.

+ + *Root perennial.*

15. **P. agrostoides,** Spreng. Culms stout, 2°-4° high, compressed, like the sheaths of the long linear leaves; panicles lateral and terminal, 4′-8′ long, closely branched, the small (1″ long) purplish spikelets crowded on the short spreading branches; second glume twice as long as the first, and the minutely bearded floret. — Bogs and marshes, Florida to North Carolina.

16. **P. anceps,** Michx. Culms erect, 2°-3° high, flat, like the sheaths of the long broadly linear spreading leaves; spikelets mostly crowded, singly or in clusters, ovate-lanceolate, acute, 1½″ long; glumes laterally compressed at the top, soon spreading, the second 7-nerved, twice as long as the first, and one third longer than the floret. — Low ground, common.

17. **P. stenodes,** Griseb. Culms simple or branched, 2°-3° high; leaves narrow-linear, erect; panicle mostly terminal, small and spike-like, or larger and spreading; spikelets as in the preceding, about 1″ long, more or less crowded; glumes 5-nerved. (P. anceps, var., *Flora.*) — Low ground, Florida, and westward, near the coast.

18. **P. gymnocarpum,** Ell. Culms stout, 2°-4° high; leaves smooth, 12′-14′ long, 1′ or more wide; panicle nearly simple, the straight spreading branches (4′-6′ long) clustered or whorled, bearing the lanceolate acuminate spikelets in short 3-5-flowered 1-sided racemes; glumes open, the first and third equal, the second longer, 5-nerved, more than twice as long as the floret. — River banks, Georgia, Florida, and westward.

19. **P. repens,** L. Culms simple, erect from a creeping base, 1°-2° high; leaves narrow, involute, 2′-4′ long, rigid; panicle 2′-4′ long, somewhat corymbose; spikelets single, oval, 1″ long; upper glumes acute, 7-nerved, as long as the floret. — Along the coast, Florida, and westward.

* * * *Panicle mostly decompound: spikelets shorter than their pedicels.*

+ *Culms tall, simple: panicle 1° or more long.*

20. **P. virgatum,** L. Culms 2°-4° high; leaves broadly linear, flat, 1° or more long; branches of the large spreading panicle whorled or clustered; spikelets ovate, 1″ long; glumes acuminate, the upper 7-nerved, one third longer than the lowest, and the obtuse floret; sterile flower triandrous. — Open woods, common.

21. **P. amarum,** Ell. Glaucous; culms stout, 3°-6° long; leaves long and rigid, soon convolute; panicle 1°-2° long, the branches erect; spikelets like those of the preceding, but larger. — Drifting sands along the coast, Florida to North Carolina.

+ + *Culms branching: panicle ample, its base or peduncle included in the upper sheath: spikelets long-pedicelled.*

22. **P. autumnale,** Bosc. Perennial, nearly glabrous; culms ascending, 1° high; leaves linear, 2′ - 3′ long, scabrous above; spikelets spindle-shaped, their pedicels 2′ - 3′ long; upper glumes longer than the acute floret, the lower minute. — Dry sandy soil, not common.

23. **P. capillare,** L. Annual, hirsute; culms erect or decumbent, 1° - 2° long; leaves broadly or narrowly linear; spikelets lanceolate or elliptical, 2″ or less long; upper glumes twice as long as the lower, and longer than the obtuse floret. — Dry soil, common.

+ + + *Culms herbaceous, at first generally simple, but later bearing more or less clustered few-flowered branches from the lower joints: leaves mostly short and flat: panicle loose or spreading,* 1′ - 6′ *long.*

++ *Spikelets* 1″ *or more long: sterile flower neutral (except the first).*

24. **P. latifolium,** L. Culms smooth, erect; leaves ovate-lanceolate, mostly smooth, the sheaths, especially at the joints, villous; panicle nearly simple; spikelets large (2″ long), obovate; glumes pubescent, obtuse, the upper 2 - 3 times longer than the lower one; sterile flower 3-androus. — Dry rich soil, common. May. — Culms 1° - 1½° high. Leaves and panicles 3′ - 4′ long, the latter exserted.

25. **P. clandestinum,** L. Culms rigid (1° - 2° high), branched, naked at the joints; leaves lanceolate, acuminate, the sheaths papillose-hirsute; panicles small, lateral and terminal, more or less included in the sheaths; spikelets oblong, smooth or pubescent (1½″ long); lower glume rarely half the length of the 7-nerved upper one. — Dry sterile soil in the upper districts. Sept. ♃.

Var. **pedunculatum,** Gray? Taller (2° - 4° high); leaves 4′ - 10′ long, the sheaths smooth or merely pubescent; terminal panicle 4′ - 5′ long, diffuse, long-peduncled. — River banks, Florida.

26. **P. Joorii,** Vasey. Culm 8′ - 12′ high, dichotomously branched, very leafy; leaves lanceolate, 3′ - 4′ long; panicles shorter than the leaves, few-flowered; spikelets oblong, pubescent, 1″ long; upper glumes as long as the acute floret, the lower minute. — Mississippi, and westward.

27. **P. commutatum,** Schultes. Smooth or pubescent; culms 1° - 2° high; leaves broadly or narrowly lanceolate, 2′ - 5′ long; panicle long-peduncled, 2′ - 6′ long, diffuse; spikelets oblong, rather acute, 1″ - 1½″ long; upper glumes equalling the acute floret, thrice as long as the lower one. (P. nervosum, *Elliott.*) — Dry open woods, common.

28. **P. scoparium,** Muhl., Lam.? Hairy or woolly all over, except the upper surface of the somewhat rigid lanceolate leaves; culms stout (1° - 1½° high), mostly simple; panicle terminal, exserted; spikelets obovate (1½″ long), obtuse, pubescent; upper glume 9-nerved, three times the length of the lower one; sterile flower neutral. — Open woods and margins of fields, in dry soil. May.

29. **P. pauciflorum,** Ell. Culms scabrous, soon branching, 1° - 1½° high; leaves linear-lanceolate, 2′ - 3′ long, the sheaths hirsute, bearded at the throat;

panicle simple, few-flowered; spikelets smoothish, obovate, 1½′ long; upper glumes oval, three times the length of the lower one. — Low ground, Florida to North Carolina, and westward.

30. **P. viscidum,** Ell. Softly villous all over, except the branches of the panicle, and a narrow ring below each joint of the tall (3° – 4° high) culm; leaves lanceolate, 6′ – 10′ long, sheaths viscid; panicle compound, lax-flowered, 4′ – 6′ long; spikelets ovate, 1″ long; upper glume strongly 9-nerved, the lowest minute. (P. scoparium, *Michx.*) — Wet ground in the lower districts.

31. **P. depauperatum,** Muhl. Culms low (2′ – 12′ high), simple, erect, like the linear leaves; panicle simple, few-flowered, with the branches erect, often shorter than the subtending leaf; spikelets oval-obovate (1″ long), mostly acute; upper glume 9-nerved, smoothish, three times the length of the ovate lower one. — Dry sandy soil in the upper districts. June. — Leaves rigid, 2′ – 6′ long, smoothish or hairy.

++ ++ *Spikelets less than 1″ long; sterile flower neutral.*

32. **P. scabriusculum,** Ell. Culms smooth or slightly scabrous, 3° – 4° high; leaves linear-lanceolate, acuminate, 5′ – 10′ long, the sheaths more or less pubescent; panicle smooth, diffuse, long-peduncled, 5′ – 6′ long; spikelets smooth, oblong, ¾″ long, mostly purple; upper glumes longer than the oblong acute floret, the lower minute. — Wet banks of streams in the pine barrens of the lower districts.

33. **P. microcarpon,** Muhl. Glabrous; culms strictly erect, 2° – 3° high; leaves thin, lanceolate, acuminate, cordate, 4′ – 6′ long, the uppermost about the length of the panicle; panicle 4′ – 6′ long, the setaceous branches diverging; spikelets very numerous, oval, smooth, ½″ long; upper glumes as long as the oval floret, the lower minute. — Rich shaded soil, chiefly in the upper districts.

34. **P. Floridanum.** Culms erect, 1½° – 2° high; leaves narrowly lanceolate, rigid, 2′ – 4′ long, the sheaths pubescent, the uppermost much shorter than the oval panicle; spikelets oval, ⅔″ long, almost villous; upper glumes as long as the floret, the lowest minute; palet of the sterile flower minute or wanting. (P. microcarpon, var., *Vasey.* P. sphærocarpum, *Flora.*) — In and around shallow ponds, near the coast of West Florida.

35. **P. sphærocarpon,** Ell. Culms 10′ – 15′ high, bearded at the nodes; lowest leaves oblong-ovate, short and crowded, the upper lanceolate, cordate-clasping, 2′ – 4′ long, with the base ciliate, scabrous above; panicle oval, 2′ – 3′ long, loosely many-flowered; spikelets oval or roundish, ¾″ long, minutely pubescent; upper glumes thrice as long as the lowest; floret oval, obtuse. — Dry open woods, Florida to Tennessee.

36. **P. consanguineum,** Kunth. Smooth or villous; culms 10′ – 15′ high, soon excessively branching; leaves linear or linear-lanceolate, 2′ – 4′ long; panicle 2′ – 3′ long, often simple, loosely flowered; spikelets oblong or obovate, varying from ½″ – 1½″ long. upper glumes strongly 7-nerved; palet of the sterile flower wanting. (P. villosum and P. angustifolium, *Ell.*, the smooth form. P. neuranthum, *Griseb.*, a low form growing in dry sandy soil.) — Damp shaded soil, common.

37. **P. discolor,** Muhl. ! Nearly glabrous, and with the habit of the preceding; culms 1° – 2° high, purple; leaves rigid, linear-lanceolate, ciliate, 1′ – 2′ long; sheaths purple, shorter than the internodes; panicle simple or compound, 2′ – 3′ long; spikelets obovate, smooth; upper glumes strongly 7-nerved, oval, the lowest dark purple. — Dry sandy pine barrens near the coast, West Florida.

38. **P. laxiflorum,** Lam. Culms erect or spreading, smooth, 6′ – 12′ long; leaves 3′ – 5′ long, lanceolate, or narrower, ciliate, yellowish; sheaths villous with long spreading hairs; panicle loosely branched, hairy; spikelets scattered, oblong or obovate, pubescent, rarely 1″ long; upper glumes 7-nerved, the lower minute. (P. pubescens and P. ciliatum, *Ell.*, the latter a low glabrous form, with shorter and broader long-ciliate leaves, and smaller smooth spikelets.) — Swamps and low ground, common, and very variable.

Var. **pubescens** (P. pubescens, Lam.). Pubescent or villous throughout; panicles more compact, many-flowered; spikelets smaller. — Dry open woods and fields, very common.

This very variable species, I suppose, includes among its autumnal forms the P. dichotomum, L., which, possessing characters only common to most of the species of the group, and in their earlier stages descriptive of none, may well be omitted.

39. **P. nitidum,** Lam. ?, Michx. Smooth or pubescent; culms 1° – 2° high, mostly purple, often villous at the joints; leaves few and remote, lanceolate-linear, rather rigid, 1′ – 3′ long, the sheaths naked or bearded at the throat, the lowest crowded; panicles ovate or oblong, the numerous flexuous branches widely spreading, 1½′ – 2′ long; spikelets very numerous, obovate, minutely pubescent, ½″ long; lowest glume minute, the upper as long as the floret. — Low ground, common, and very variable.

Var. **barbulatum** (P. barbulatum, Michx.). Culms mostly villous at the joints; leaves larger and thinner; branches of the panicle straight and diverging; spikelets oblong, glabrous. — Light shaded soil.

Var. **ensifolium** (P. ensifolium, Baldw.). Culms very slender, 6′ – 12′ high; leaves and few-flowered panicle 1′ or less long; spikelets minute, pubescent. — Around pine barren ponds near the coast.

40. **P. lanuginosum,** Ell. Softly pubescent throughout; culms 1° – 2° high, geniculate, soon diffusely branching; leaves thin, linear-lanceolate, 2′ – 3′ long; panicles long-peduncled, oblong, loosely flowered, 2′ – 3′ long, the branches smooth and setaceous; spikelets oval, pubescent, ¾″ long; upper glumes 7-nerved, five times longer than the lowest one. — Low ground, Florida to Tennessee.

41. **P. ramulosum,** Michx. Culms very slender, declining, 1° – 2° long, soon dichotomously much branched; leaves few and remote, lanceolate-linear 1′ – 2′ long, the sheaths ciliate; panicle long-peduncled, simple, sparsely few-flowered, 1′ – 2′ long; spikelets long-pedicelled, oblong, smooth, nearly 1″ long; upper glumes 5-nerved, thrice longer than the lowest, equalling the floret. (P. nudicaule, *Vasey.*) — Shaded miry banks of streams, Florida to Tennessee.

42. **P. Baldwinii,** Nutt. (in Herb). Low (6′ – 8′ high), tufted, very smooth and shining; culm mostly purple; leaves linear; panicle diffusely

branched, many-flowered (1½′ – 2′ long); spikelets minute, purple, very smooth, the upper glumes 5-nerved. (P. ramulosum, *Flora.*) — Low sandy pine barrens, Florida and Georgia.

+ + + + *Culms frutescent: spikelets nodding.*

43. **P. divaricatum,** L. Shrubby, smooth; culms reclining, with short and spreading branches; leaves lanceolate, faintly nerved, deciduous from the persistent sheaths; panicles small, simple, few-flowered, terminating the branches; spikelets (2″ long) obovate, turgid; glumes smooth, many-nerved, tipped with a tuft of down. — Keys of South Florida. — Leaves 1½′ – 2′ long. Branches of the panicle short and diverging.

§ 3. ECHINOCHLOA. — *Spikelets crowded on one side of the racemed or panicled spikes: glumes hispid-pointed or awned.*

44. **P. Crus-galli,** L. Culm stout (2° – 4° high), branching; leaves very long, broadly linear, rough; sheaths smooth or hispid; spikes (1′ – 2′ long) very numerous; spikelets clustered; glumes strongly hispid on the nerves, acute or long-awned. — Marshes, and around homesteads, common. August – Sept. ① — Awns pale or purple.

45. **P. colonum,** L. Culms (1° – 2° high) branching; leaves linear, smooth, like the sheaths; spikes 5 – 12, distant, erect or appressed (½′ – 1′ long), bearded at the base; spikelets in 3 rows, awnless; glumes hispid on the nerves, pointed; floret barely pointed; rachis rough. — With the preceding. July – Sept. ① — Spikelets purplish.

§ 4. HYMENACHNE. — *Spikelets crowded in a spicate panicle: second glume gibbous at the base, twice as long as the floret.*

46. **P. gibbum,** Ell. Culms branching, reclining, 2° – 4° long; leaves linear-lanceolate, 3′ – 6′ long, smooth or hairy; panicle 3′ – 6′ long; second glume 11-nerved, oval, the lower minute; sterile flower triandrous. — Swamps in the lower districts.

8. SETARIA, Beauv. FOX-TAIL. PIGEON GRASS.

Spikelets as in Panicum proper, in compact spikes or spike-like panicles, the short pedicels bearing an involucre of one or more hispid persistent bristles below the joint. Mostly erect, annuals.

* *Bristles hispid downward.*

1. **S. verticillata,** Beauv. Culms 2° high; leaves lanceolate-linear; spikes compact, 2′ – 3′ long; bristles 1 – 2, short. — Around homesteads. Introduced.

* * *Bristles hispid upward.*

+ *Spikes simple, cylindrical*

2. **S. glauca,** Beauv. Annual; culms slightly compressed, 1° – 2° high; leaves linear-lanceolate, scabrous above; spikes compact, pale or purple, bristles 6 – 10, much longer than the spikelets; floret rugose. — Cultivated ground, common.

3. **S. lævigata.** Perennial, glabrous; culms more compressed; leaves longer and narrower; floret obscurely rugulose; spikes yellowish; spikelets of the preceding. (Panicum, *Muhl.*) — Saline marshes along the coast.

4. **S. imberbis,** R. & S. Glabrous; culms 1° - 3° high; leaves linear, 8′ - 10′ long; spikes linear-cylindrical, 2′ - 5′ long; bristles 4 - 8, about twice as long as the spikelet; floret faintly rugulose. — Manatee, Florida (*Simpson*), and westward.

+ + *Spikes compound.*

5. **S. viridis,** Beauv. Culms smooth, 1° - 3° high; leaves lanceolate-linear, scabrous; spikes cylindrical, compact, 1′ - 2′ long; bristles 1 - 3; floret finely striate and dotted. — Cultivated ground. Introduced.

6. **S. corrugata,** Schultes. Culms, leaves, and sheaths scabrous; spikes compact, cylindrical, 3′ - 6′ long, purple; bristle long, single; floret strongly rugose. — Dry sandy soil, Georgia and Florida.

7. **S. composita,** Kunth? Culms smooth, 2° - 4° high; leaves smoothish, linear-lanceolate, 1° long, the sheaths ciliate, bearded at the throat; spikes loosely compound, 6′ - 12′ long; bristles long, single or in pairs; floret obscurely rugulose. — Dry sandy soil along the west coast of Florida.

8. **S. magna,** Griseb. Culms smooth, 4° - 8° high; leaves long, scabrous, ½′ - 1′ wide; spikes cylindrical, compact, 6′ - 18′ long; bristles 1 - 2; floret smooth and even. — Wet ground near the coast.

9. CENCHRUS, L. SAND-SPUR. COCK-SPUR.

Spikelets as in Panicum proper, but enclosed, 1 - 5 together, in a downy and spiny or bristly, at length indurated and deciduous involucre, these bur-like, and arranged in a terminal spike. Chiefly annual grasses, with branching culms. Spines of the involucre barbed.

1. **C. echinatus,** L. Culms ascending, 1° - 2° long; leaves broadly linear, 4′ - 6′ long; involucres numerous, globular, spiny above, and with a row of bristles above the base, 3 - 5-flowered. — Fields and waste ground, rather rare.

2. **C. tribuloides,** L. Culms ascending, ½° - 1½° high; leaves linear, flat; involucres few, globular, the numerous spines spreading and reflexed, mostly 3-flowered. — Fields and waste ground, too common.

3. **C. incertus,** M. A. Curtis. Culm strict, erect or ascending (2° - 3° long); leaves linear, folded, the lower sheaths longer than the internodes; spike cylindrical, many-flowered; involucre naked and acute at base, the 10 or 11 stout spines ciliate; spikelets geminate, smooth; sterile flower triandrous. (C. strictus, *Chapm.*) — Sandy coast, Florida to North Carolina.

4. **C. myosuroides,** HBK. Tall (4° - 6° high); leaves long, rigid, convolute; spikes cylindrical, densely many-flowered; involucre small, 1-flowered, armed with 20, or more, slender spines or bristles, as long as its strongly nerved spikelet. (Panicum cenchroides, *Ell.*) — South Florida (*Blodgett*), Georgia (*Elliott*).

10. PENNISETUM, Rich.

Characters of Cenchrus, but the involucre composed of distinct scabrous bristles, of which the interior are plumose below, and deciduous with the spikelets.

1. **P. setosum,** Rich. Perennial, 2° - 4° high; leaves linear, glabrous; spikes cylindrical, 3′ - 6′ long; spikelets single; lowest glume minute or none. — Lastero Bay, South Florida (*Garber*).

11. STENOTAPHRUM, Trin.

Spikelets as in Panicum, placed, either in pairs with one pedicellate and sterile, or 4 – 6, and all sessile and fertile, in excavations of the broad flattened jointless rachis. Grasses with creeping culms, and flat or folded leaves.

1. **S. Americanum,** Schrank. Culm compressed; flowering branches erect, 6′ – 12′ high; leaves linear, obtuse; spikes pedicelled, lateral and terminal, 2′ – 5′ long; spikelets in pairs, the sterile one neutral, its palet coriaceous. — Damp ground along the coast. June – July.

12. LEERSIA, Swartz. Cut Grass.

Perennial aquatic or marsh grasses, with the leaves and sheaths more or less roughened by minute curved points, the 1-flowered spikelets compressed and imbricated along the slender branches of the mostly simple panicle. Sterile glumes none, the floret chartaceous, flat or conduplicate, mostly hispid-ciliate on the keel. Stamens 1 – 6. Grain compressed.

1. **L. oryzoides,** Swartz. Culms branching and prostrate below, 3° – 4° long; leaves and sheaths very scabrous; panicle large, diffuse, its base mostly included; spikelets oblong-lanceolate, flat, 2″ long; stamens 3 — Swamps and ponds, common.

2. **L. Virginica,** Willd. Culms branching, weak and reclining, 2° – 3° long; leaves linear; panicle simple exserted; spikelets oblong, concave, 1″ long; stamens 1 – 2. — With the preceding, common.

3. **L. lenticularis,** Michx. Culms erect, simple, 2° – 3° high; leaves lanceolate; panicle simple, spreading; spikelets oval, flat, 2½″ long; stamens 2. — Wet or marshy banks, Florida to North Carolina.

4. **L. monandra,** Swartz. Culms 1° – 3° high, slender; leaves linear, the sheaths smooth; panicle long-exserted, sparingly branched; spikelets 1″ long, oval, acute, smooth; stamen 1. — Coast of South Florida, and westward.

5. **L. hexandra,** Swartz. Culms 2° - 6° long, branching; leaves and sheaths smooth or scabrous; panicle contracted, short branched, exserted; spikelets lanceolate, 2″ long; stamens 6. — Lakes and ponds, often in deep water, Florida, and westward, near the coast.

13. LUZIOLA, Juss.

Perennial marsh or aquatic grasses, with narrow elongated leaves, and panicled monœcious inflorescence, the pistillate and staminate spikelets in separate panicles. Spikelets 1-flowered. Glumes 2, nearly equal. Stamens 5 – 11. Styles 2, the stigmas plumose. Grain ovoid, free.

1. **L. Alabamensis,** Chapm. Glabrous; culms very short; leaves mostly 2, linear, the lower elongated, its long sheath including the peduncle of the simple few-flowered panicle; glumes of the staminate spikelet 7-nerved, of the pistillate 11 – 13-nerved. — South Alabama and Mississippi. Rare.

14. HYDROCHLOA, Beauv.

A small floating or creeping grass, with short oblong-linear flat leaves, and simple spikes of 3 – 4 small monœcious 1-flowered (white) spikelets, mostly included in the sheaths of the upper leaves, the upper one staminate and exserted. Glumes 2, hyaline, the lower one emarginate, the upper acute. Palet none. Stamens 6. Styles 2: stigmas elongated. Grain ovoid, free.

1. **H. Carolinensis,** Beauv. (Zizania fluitans, *Michx.*) — Floating in still water or creeping on muddy banks, Florida to North Carolina. July – August. — Culm filiform, branching, ½° – 2° long. Leaves 1′ – 2′ long.

15. ZIZANIA, Gronov. Wild Rice.

Rank water grasses, with broad flat leaves, and large diffuse panicles of monœcious 1-flowered spikelets, on club-shaped jointed pedicels. Glumes 2, membranaceous, the lower one of the pistillate spikelets awned. Stamens 6. Stigmas elongated, brush-shaped. Grain cylindrical, free.

1. **Z. aquatica,** L. Spikelets of the lower portion of the panicle staminate, of the upper pistillate; awn straight, elongated; styles 2; grain linear. — Deep marshes and ponds, common. July. — Culms 4° – 8° high. Leaves rough beneath. Panicle 1° – 2° long.

2. **Z. miliacea,** Michx. Panicle diffuse; staminate and pistillate spikelets intermixed; awns short; styles united, elongated; leaves smooth, with rough margins; grain oval. — With the preceding. April – May. — Culms 4° – 6° high. Leaves somewhat glaucous.

16. PHARUS, P. Browne.

Aquatic grasses, with broad flat leaves, petiole-like sheaths, and monœcious flowers disposed in a simple terminal panicle. — Spikelets by pairs, unequal, the smaller pedicelled, hexandrous, the larger pistillate, with the flowering glume indurated, involute. Empty glumes 2, thin. Style long; stigmas 3. Grain linear, included.

1. **P. latifolia,** L. Floating; leaves oblong, rough beneath, longer than the sheath; flowering glume pointed, downy on the back, twice as long as the lanceolate empty glumes. — Orange Lake, Florida (*Herb. Thurber*).

17. ROTTBŒLLIA, L. f.

Erect perennial mostly tall grasses, with flat or channelled leaves, and spiked inflorescence. Spikes nearly terete, jointed. Spikelets awnless, in pairs at the base of each joint; one imperfect, on a coriaceous and closely appressed pedicel; the other perfect, sessile, embedded in an excavation of the joint, 2-flowered. Glumes 4, the exterior flat, coriaceous, with a hinge-like depression at the base, the interior boat-shaped, membranaceous. Palets hyaline. Stamens 3. Styles 2. Grain compressed, free. — Spikes solitary on lateral and terminal peduncles or branches.

1. **R. rugosa,** Nutt. Culms compressed; peduncles or branches in pairs, short, included in the sheaths of the upper leaves; spikes spreading, slightly compressed; lower glume lanceolate, transversely rugose; sterile flower neutral. — Pine barren swamps and ponds, Florida to North Carolina. Sept. — Culms 2° – 4° high. Spikes green, 1½′ – 2′ long, 1″ in diameter.

2. **R. corrugata,** Baldw. Culm stout, compressed; peduncles mostly single; spikes slightly compressed, erect; lower glume longitudinally grooved and somewhat reticulated, ovate; sterile flower staminate. — Low pine barrens, Georgia and Florida, near the coast. Sept. - Oct. — Culm 2° - 4° high. Spikes 4′ - 6′ long, 2″ in diameter, purplish.

3. **R. cylindrica,** Chapm. Culm slender, terete; leaves narrowly linear; peduncles single, elongated; spikes slender, terete, mostly curved; spikelets as long as the joint; lower glume ovate, obtuse, obscurely pitted in lines; sterile spikelet rudimentary. — Dry sandy soil, Florida, and westward. July - Sept. — Culms 1° - 2° high. Spikes 2′ - 6′ long, 1″ in diameter, purplish.

18. MANISURIS, L.

Annual grasses, with branching culms, flat leaves, and spiked inflorescence. Spikes lateral and terminal, jointed, the short peduncles enclosed in spathe-like sheaths. Spikelets 1-flowered, placed one at each end of the joints of the spike; the upper neutral, compressed, of two nearly equal membranaceous glumes; the lower perfect, globose. Glumes coriaceous, concave, the lower reticulated. Palet hyaline. Stamens 3. Grain included.

1. **M. granularis,** Swartz. Leaves linear-lanceolate, and, like the sheaths, hairy; spikes 6″ - 10″ long; spikelets minute, turning black. — Fields and pastures. August - Sept. Introduced. — Culms 1° - 2° high.

19. TRIPSACUM, L. Gama Grass.

Tall perennial grasses, with solid culms, broad and flat leaves, and spiked inflorescence. Spikes jointed. Spikelets 2-flowered, the upper ones staminate, the lower fertile, 2-flowered. Staminate flowers by pairs on each short triangular joint of the slender rachis, 3-androus; glumes 2, coriaceous; paleæ hyaline. Pistillate spikelets single, embedded in a deep excavation of the thick and polished joints; the outer glume cartilaginous, concave, the inner membranaceous, boat-shaped; lower flower neutral, the upper pistillate, both with hyaline paleæ. Anthers opening by terminal pores. Stigmas elongated. Grain free.

1. **T. dactyloides,** L. Culms erect, 3° - 6° high; leaves 2° - 3° long, 1′ wide; spikes 1 - 3, 4′ - 8′ long, on long lateral and terminal peduncles, the fertile joints 3 - 5, angular, or, in var. monostachyum, several and terete. — Dry rich soil, common.

2. **T. Floridanum,** Porter. Culms more slender, 2° - 4° high; leaves narrower and more rigid; spikes single, 6′ - 10′ long, erect; the joints shorter; spikelets smaller, 2-ranked. — Florida, and westward.

20. ELIONURUS, HBK.

Tall erect perennial grasses, with the inflorescence of Andropogon, but the awnless spikelets borne alternately on two sides of the slender flexuous rachis, forming a solitary long-peduncled villous spike.

1. **E. tripsacoides,** HBK. Culms (3° - 4° high) straight, smooth like the long linear leaves; spikes long-peduncled, the rachis and pedicel of the sterile flower fringed with closely appressed white hairs; spikelets awnless;

glumes hispid above; sterile flower 3-androus. (Andropogon Nuttallii, *Flora.*) — Low pine barrens, Florida and the lower districts of Georgia. Sept. — Spikes 3′ - 6′ long.

21. ANDROPOGON, L. Broom Grass.

Coarse perennial grasses, with branching erect culms, long and harsh leaves, and spiked inflorescence. Spikes lateral and terminal, jointed. Spikelets by pairs on each joint of the slender commonly hairy or plumose rachis; one of them pedicelled and staminate, neutral, or rudimentary; the other sessile, 1-flowered, and fertile. Glumes 4, the lowest coriaceous, the 2 upper hyaline, the 4th and flowering one awned. Stamens 1 - 3.

* *Spikes solitary: sterile flowers staminate or neutral.*

1. **A. oligostachyus,** Chapm. Culms simple, rigid, erect; leaves linear, smooth, glaucous; spikes 3 - 4, on short mostly included peduncles, hoary with short spreading hairs; lower glume pubescent, ½ - ⅓ as long as the contorted awn; sterile flower neutral, short-awned. (A. hirtiflorus, *Kunth* ?) — Dry sand ridges, Middle Florida. August - Sept. — Culm 2° - 3° high. Spikes 2′ - 3′ long.

2. **A. tener,** Kunth. Culms filiform, like the smooth soon involute leaves; spikes terete, with the joints bearded at the base, otherwise smooth; spikelets appressed, half as long as the bent awn; pedicel of the awnless neutral flower bearded at the apex. — Dry grassy pine barrens, Georgia, Florida, and westward. Sept. — Culms 2° - 3° long. Spikes slender, 1′ - 2′ long. Upper leaves short, bearded at the throat.

3. **A. semiberbis,** Kunth. Culms branching, 2° - 4° high, the branches single, or in unequal pairs; leaves linear, glaucous; spikes 2′ - 3′ long, short-peduncled, the pedicel of the short-awned sterile flower bearded on one side; awn of the perfect flower twice as long as the glumes. — Miami, South Florida (*Garber*).

4. **A. gracilis,** Spreng. Culms branching above, 1° - 1½° high; leaves very narrow; pedicels villous at the top, long-exserted from the filiform leafless bracts; spikes 1½′ long, few-flowered; glumes smooth, the 4th long-awned. — With the preceding (*Garber*).

5. **A. scoparius,** Michx. Leaves smooth or hairy; spikes numerous, on exserted peduncles, the slender flexuous rachis, and pedicel of the awned or awnless staminate or neutral sterile flower fringed with spreading hairs; perfect flower half as long as the awn, the glumes often roughened with elevated points. — Dry sterile soil. August - Sept. — Culms 2° - 3° high, the branches clustered. Spikes 1′ - 2′ long.

6. **A. maritimus,** Chapm. Culms erect from the creeping base, short-jointed, the short branches mostly single; leaves mostly reflexed; the lower sheaths compressed and imbricated; spikes few, partly enclosed, very villous; glumes 4″ - 5″ long, half as long as the twisted awn; sterile flower triandrous. — Drifting sand along the coast. Sept. — Culms 1° - 1½° high. Leaves 3′ - 6′ long.

* * *Spikes* 2, *and in pairs, rarely* 4, *or more, hoary with long spreading hairs, the peduncle sheathed by a leaf-like bract: sterile flower a single glume, or obsolete.*

+ *Bract mostly shorter than the peduncle, its blade very short or none* (*in No.* 7 *variable*).

7. **A. Elliottii,** Chapm. Culms 2° – 3° high, bearded at the upper joints, the branches short and simple; leaves narrow linear, the lower sheaths hairy, the upper smooth and mostly densely crowded and enlarged; spikes 2 (rarely 4), long-exserted, or included in the upper sheaths, loosely 8 – 10-flowered, the hairs long and glossy; glumes scabrous, 2½″ long, one third as long as the straight awn. — Dry pine barrens. Sept.

8. **A. arctatus,** Chapm. Culm single (2° – 5° high), the appressed branches narrowly paniculate; leaves and sheaths shaggy with long white, mostly deciduous hairs; spikes by pairs (1′ – 1½′ long), rather stout, closely 15 – 20-flowered; glumes rough, twice as long as the joints of the rachis; hairs of the rachis few and short; stamen 1. — Low pine barrens, Florida. Sept. – Oct.

9. **A. argyræus,** Schultes. Glabrous and more or less glaucous; culms 2° high; branches simple, erect, the lower single, the upper in pairs, bearded below the upper joints; leaves linear, 6 – 8 long; spikes 2, 1½′ – 2′ long, 10 – 12-flowered, densely villous, the stout peduncle closely enwrapped by the leafless bract; glumes 2½″ long, smooth, nerveless, longer than the rigid very villous joints of the rachis; awns 1′ long; stamens 3. — Dry soil in the lower districts. Sept. – Oct.

10. **A. Cabanisii,** Hackel. Habit and most of the characters of the preceding, but the spikes narrower and 10 – 15-flowered, the rachis less villous, with shorter hairs; lower glume scabrous, and faintly nerved; awns ½′ long. South Florida (*Garber*).

+ + *Bract longer than the peduncle* (*except No.* 15), *its blade mostly longer than the spikes.*

11. **A. longiberbis,** Hackel. Culms 2° high, loosely paniculate above the middle; leaves linear, smooth, 5′ – 10′ long, the lower sheaths appressed-pubescent; spikes 2, rather rigid, closely 10 – 12-flowered, shorter than the bracts, the straight rachis densely villous with long spreading hairs; glumes 2″ long; pedicel tipped with a subulate glume. — South Florida (*Garber, Simpson*).

12. **A. Virginicus,** L. (BROOM-GRASS.) Culms 3° – 4° high, narrowly paniculate above the middle; leaves linear, mostly glabrous, like the sheaths; spikes 2 – 4, 9″ – 12″ long, loosely 6 – 10-flowered, the very slender flexuous rachis rather sparsely villous; glumes 1½″ long, one third longer than the joints, these naked below; sterile glume none; awns 6″ – 8″ long. — In open ground, everywhere. Sept. – Oct. — The most marked varieties are:

Var. **tetrastachyus,** Hackel. Culms stouter; leaves and sheaths villous with spreading hairs; spikes 4, 1′ – 1½′ long, 12 – 16-flowered. — Low ground, Florida and Alabama.

Var. **stenophyllus,** Hackel. Culms slender, strictly erect; branches straight and erect or appressed; leaves narrow-linear or filiform, erect; spikes

1′ long, 8-10-flowered. — Wet pine barrens, Florida. — Culm and leaves purple.

Var. **vaginatus.** (A. vaginatus, *Ell. Herb.*!) Bracts broad, enclosing the spikes.

13. **A. Mohrii,** Hackel. Culms stout, 3°-4° high, the branches short and rigid; leaves and sheaths woolly; spikes 4-7, rigid, 1′-1½′ long, 7-10-flowered; glumes 2″ long, hispid-serrulate above, as long as the pedicel of the awn-like sterile flower; awns 8″ long. (A. tetrastachyus, *Flora.*) — Around pine barren ponds, West Florida and South Alabama. Sept.-Oct.

14. **A. brachystachyus,** Chapm. Culms strictly erect, 4°-5° high, the short and slender branches mostly in pairs, forming a loose narrow panicle 2°-3° long; leaves linear, glabrous like the sheaths; spikes in pairs, ½′ long, 6-8-flowered, as long as the bracts; glumes 1½″ long, twice the length of the joints of the slender rachis, and nearly as long as the awn; sterile flower none. — East Florida (*Curtiss*).

15. **A. macrourus,** Michx. Culms firmly erect, 3°-5° high; leaves and sheaths scabrous, and often villous; panicle 1°-2° long, composed of excessively numerous crowded branches; spikes in pairs, loosely 6-8 flowered, exceeding the bracts; glumes ⅓ longer than the slender joints of the thinly villous rachis; sterile flower minute; awn 6″ long. — Low ground, common. — Upper branches mostly bearded below the joints.

Var. **corymbosus** is a reduced form of the preceding, the simple culm (1°-2° high) bearing a single corymbose 1-sided panicle. — Wet pine barrens.

Var. **glaucopsis,** Ell., is a more slender smooth and glaucous form, with more open inflorescence, and bracts longer than the spikes. — Pine barren swamps.

Var.? **viridis,** Chapm. Culms 3°-4° high, loosely paniculate with long slender branches; leaves and sheaths smooth or hairy; bracts longer than the scattered spikes. — Low pine barrens near the coast, Florida.

* * * *Spikes 2-5 at the summit of the culm, and 1-3 on the branches, rigid, not villous, the rachis and pedicel of the triandrous awnless sterile flower fringed with scattered hairs, and short-bearded at the base.*

16. **A. furcatus,** Muhl. Culm stout, rigid, 3°-5° high; leaves rough, fringed at the base; branches commonly 2 at each upper joint; spikelets appressed; glumes hispid on the nerves, half as long as the bent awn. — Open woods and margins of fields. Sept. — Spikes compressed, 2′-3′ long.

22. HETEROPOGON, Pers.

Spikes solitary or digitate. Spikelets 1-flowered, in pairs, the 2-7 lower pairs staminate or neutral, awnless, short-pedicelled, the 2 upper sessile, one fertile and long-awned, the other sterile and awnless. Otherwise mainly as in Andropogon.

1. **H. acuminatus,** Trin. Culms 4°-8° high, branching above, the uppermost branches densely corymbose; leaves long, linear, the uppermost, like the lower glume of the sterile spikelets, pitted along the midnerve; spikes long-peduncled, shorter than the slender bracts; lower spikelets tri-

androus, flat, twisted, membranous, 6″ – 8″ long, the fertile smaller, indurated, closely pubescent, dark brown; awn twisted and pubescent below, 4′ – 6′ long. — Margins of fields, Georgia, Florida, and westward.

23. IMPERATA, Cyrill.

Spikelets in pairs on the slender branches of the spike-like panicle, both perfect and awnless; lower glumes clothed with long silky hairs, the upper hyaline. Stamens 1 – 2.

1. **I. Brasiliensis,** Trin. Culm simple, erect from long creeping rootstocks, 2° – 3° high; radical leaves broadly linear, 2° long, those of the culm few and short; panicles lanceolate, 4′ – 5′ long; spikelets 2″ long. — South Florida.

24. ERIANTHUS, Michx.

Tall reed-like grasses, with long flat leaves, and panicled inflorescence. Spikelets by pairs on the slender branches, alike, one pedicelled, the other sessile, both with a tuft of hairs at the base. Glumes 4, the 2 lower nearly equal, membranous, the 2 upper hyaline, the 4th awned. Stamens 2 – 3.

1. **E. alopecuroides,** Ell. Culms 4° – 10° high; sheaths of the broad (6″ – 12″) very rough or pubescent leaves woolly above, rough below; panicle (1° – 2° long) woolly, expanding, pyramidal; hairs of the involucre copious, twice as long as the sparsely hairy (2″ long) glumes; awn straight. — Var. CONTORTUS. (E. contortus, *Ell.*) Smaller (2° – 4° high); leaves and sheaths smooth; panicle (6′ – 12′ long) oblong; awns short and twisted. — Var. BREVIBARBIS. (E. brevibarbis, *Michx.*) Smooth or nearly so; rachis of the oblong panicle rough (not woolly); spikelets 3″ long; hairs of the involucre shorter than the glumes. — Dry or wet soil. — Sept. – Oct.

2. **E. strictus,** Baldw. Culms, leaves, and sheaths smooth or slightly roughened; panicle (10′ – 15′ long) spiked; involucre very short or none; glumes rough; awns straight. — River banks, Florida and the lower districts of Georgia, and westward. Sept. — Culms 4° – 8° high. Leaves 3″ — 6″ wide. Spikelets twice the size of the preceding.

25. SORGHUM, Pers.

Spikelets 2 – 3 together on the slender branches of the loose panicle; the lateral ones sterile or a mere pedicel; the middle or terminal one fertile. Lower glumes coriaceous or indurated, mostly bearded, sometimes awnless. Otherwise like Andropogon.

§ 1. BLUMENBACHIA. — *Branches of the panicle angular, scabrous: spikelets ovate or ovate-lanceolate: two lower glumes at length strongly indurated.* — This section embraces the following introduced species, which are more or less common in cultivation, viz.: S. vulgare, Durra Corn; S. saccharatum, Broom Corn; S. cernuum, Guinea Corn; and S. Halapense, Johnson Grass.

§ 2. CHRYSOPOGON. — *Branches of the panicle terete, smooth: spikelets lanceolate: glumes less indurated.* — *Culms mostly simple. Pedicels bearded under the spikelets. Sterile spikelets none.*

* *Perennial.*

1. **S. avenaceum,** (Michx.) Chapm. Culms 3° – 5° high, smooth, like the linear leaves; panicle erect, oblong, 6′ – 12′ long; glumes pale or yellowish, the lowest thinly bearded, half the length of the awn. — Dry sterile soil. Sept.

2. **S. nutans,** Gray. Culms slender, mostly bending, 2° – 4° high; leaves narrow-linear; panicle long and narrow, loosely branched, drooping; glumes dark brown, the lowest densely, the second thinly bearded, one fourth the length of the awn. — Dry open woods. Sept.

3. **S. secundum,** (Ell.) Chapm. Culms strictly erect, 3° – 5° high; leaves narrow-linear, convolute; panicle erect, simple, 6′ – 12′ long, the few-flowered branches 1′ long, 1-sided; spikelets drooping, brown; glumes densely bearded, $\frac{1}{4}$ the length of the awn. — Dry sandy pine barrens, Georgia and Florida. Oct.

* * *Annual.*

4. **S. pauciflorum,** Chapm. Culms branched near the base, 2° – 3° high; leaves broadly linear; spikelets 6 – 12, racemose, the long (2′ – 3′) setaceous pedicels in whorls of 2 – 6; lower glumes dark brown, beardless, like the sterile pedicel; awns 5′ – 6′ long, twisted below the middle. — Sandy pine barrens, East Florida. Sept.

26. PHALARIS, L. CANARY GRASS.

Spikelets crowded in a simple or branching cylindrical or oblong panicle, 3-flowered, awnless. Glumes 5, the two lower nearly equal, keeled, the third and fourth reduced to hairy scales at the base of the floret, the fifth and flowering glume coriaceous, and including the palet. Stamens 3. Grain free.

1. **P. intermedia,** Bosc. Annual, glaucous; culms ascending, $\frac{1}{2}$° – 2° high; leaves lanceolate-linear, 3′ – 5′ long, the uppermost sheath inflated; panicle oblong, simple, 1′ long, pale or purplish; lower glumes flat, winged, twice as long as the floret. (P. microstachya, *DC.*) — Low ground along the coast. April – May.

2. **P. arundinaria,** L. Perennial; culm simple, 2° – 4° high; leaves long, 2′ – 5′ wide; panicle 4′ – 8′ long, branching; glumes wingless, thrice the length of the floret. — Low banks of streams, Tennessee, and northward.

27. ANTHOXANTHUM, L. SWEET-SCENTED GRASS.

Spikelets 1-flowered, crowded in a spiked panicle; glumes 5, the lower thin and unequal, the third and fourth empty and awned on the back, the floret small and thin. Stamens 2. Grain enclosed.

1. **A. odoratum,** L. Culms 1° high; leaves linear, hairy; panicle 1′ – 3′ long. — Low grounds around the larger cities, Savannah, Charleston, etc. Introduced. April – May.

28. HIEROCHLOË, Gmelin. HOLY GRASS.

Perennial odorous grasses, with short flat leaves, and 3-flowered spikelets in a short simple panicle. Glumes 5, the two lower large and empty, the third and fourth triandrous and sterile, long-ciliate; the floret perfect and diandrous. Grain free.

1. **H. borealis,** R. & S. (SENECA GRASS.) Culms erect from the creeping base, 1° – 2° high; leaves distant, lanceolate, 1′ – 2′ long; panicle ovate, 2′ – 4′ long; spikelets brown. — Moist ground, Statesville, North Carolina (*Hyams*). June.

29. ALOPECURUS, L. FOXTAIL GRASS.

Spikelets 1-flowered, closely crowded in a simple spike-like cylindrical panicle. Lower glumes compressed, boat-shaped, sharply keeled, united below. Fertile glume compressed, awned on the back below the middle, the upper wanting. Stamens 3 Styles 2, distinct, or united below. Grain free, smooth and lenticular.

1. **A. geniculatus,** L. Low; culms ascending, bent at the lower joints; awn longer than the obtuse hairy glume. — Wet cultivated grounds. April. — Culms 6′ – 12′ high. Leaves 2′ – 4′ long, with the sheaths shorter than the joints. Spikes 1′ – 1½′ long.

The MEADOW FOXTAIL (A. pratensis, *L.*), a taller species (2° – 3° high), with acute glumes, is scarcely spontaneous at the South. The same observation applies to the TIMOTHY or HERD'S-GRASS (Phleum pratense, *L.*), which differs from Alopecurus in having two paleæ and awned glumes.

30. SPOROBOLUS, R. Br. DROP-SEED GRASS.

Tufted or creeping grasses, with narrow leaves, and 1-flowered awnless spikelets, disposed in open, or crowded in spiked panicles. Glumes 2, membranaceous, unequal, the lower one shorter. Floret mostly longer than the glumes, and of the same texture. Stamens 3. Styles 2.

* *Grain globose, loose in the pericarp: panicle exserted: perennial.*

+ *Panicle open, spreading.*

1. **S. Domingensis,** Swartz. Culms branching near the base, 2° long, leaves narrow-linear, roughish above, mostly hairy at the base; panicle simple, the short spreading branches loosely whorled; spikelets short-pedicelled, smooth; upper glume as long as the floret, twice as long as the lower one; palet truncate. — Wet sandy places on the Keys along the Reefs of South Florida.

2. **S. junceus,** Kunth. (WIRE GRASS.) Panicle narrow, the short and spreading branches whorled; spikelets unilateral; glumes smooth, the upper one acute, 2 – 3 times longer than the lower, and about equal to the obtuse floret; culms (1° – 2° high) erect; leaves chiefly radical, filiform and elongated, involute, those of the culm short and remote. — Dry pine barrens, common. April – May, and often in October.

3. **S. Floridanus,** Chapm. Panicle diffuse, large; spikelets (purplish) on long hair-like stalks; glumes acute, the lower one barely shorter than the obtuse floret, the upper one a third longer; leaves rather rigid, flat, pungent, very rough on the edges. — Low pine barrens, Middle and West Florida. Sept. — Culm 2° – 4° high. Leaves 1° – 2° long. Panicle 1° – 1½° long.

+- +- *Panicles spiked.*

4. **S. Indicus,** Brown. (Smut Grass.) Culms erect; panicle elongated, linear; leaves long, flat; floret twice as long as the glumes. — Waste places. May – Sept. — Culms 2° – 3° high. Leaves with bristle-like summits. Panicle 6′ – 18′ long, turning blackish. Spikelets crowded on the short appressed branches.

5. **S. Virginicus,** Kunth. Culms creeping, short-jointed, the short and mostly clustered branches erect; leaves 2-ranked, soon convolute, short and rigid; panicle small, lanceolate; glumes nearly equal, acute, rather longer than the floret. — Saline marshes along the coast. July – August. — Flowering branches 6′ – 12′ high. Leaves 2′ – 4′ long. Panicle 1′ – 2′ long, pale or purple.

* * *Grain lanceolate or oblong, adhering to the investing pericarp: panicle spiked, more or less included in the sheaths of the leaves.*

6. **S. asper,** Kunth. Perennial; culms tall and slender; leaves elongated, rough above, bristle-like at the summit; panicles partly included in the upper sheaths; floret hairy, pointed, 2 – 3 times as long as the rough-keeled glumes and linear grain. — Dry sandy soil. July – August. — Culms 2° – 3° high. Sheaths hairy at the throat.

7. **S. vaginæflorus,** Vasey. Annual; culms low, clustered, bearing partly concealed panicles at every upper joint; leaves short, smoothish; floret smooth, one third longer than the smooth glumes and oval grain. — Dry barren soil, North Carolina and Tennessee. Sept. — Culms 6′ – 12′ high. Leaves 2′ – 4′ long.

Var. **minor,** Scribner. Culms more slender and less clustered; panicles less developed; the lateral ones included; spikelets and glumes narrower. — With the type.

8. **S. cryptandrus,** Gray. Culms rather rigid, 1° – 2° high; leaves linear, flat, bearded at the throat, the uppermost sheath dilated and enclosing the base of the dense panicle; glumes keeled, the upper as long as the floret, and twice as long as the lower one. — Coast of North Carolina.

31. AGROSTIS, L. Bent Grass.

Tufted usually tender grasses, with flat and narrow leaves; the small 1-flowered spikelets racemose on the hair-like clustered branches of the open panicle, on thickened pedicels. Glumes 2, nearly equal, longer than the floret. Flowering glume awnless, or awned on the back, 3 – 5-nerved, the palet 2-nerved, occasionally minute or wanting. Stamens 1 – 3. Styles or stigmas 2. Grain free.

§ 1. Trichodium. — *Palet minute or wanting.*

1. **A. elata,** Trin. Culms stout, strictly erect, 2° – 3° high; leaves 6′ – 8′ long, 1″ – 2″ wide; panicle open, the clustered branches closely flower-bearing above the middle; lower glumes 1½″ long, rather longer than the flowering one; palet minute or wanting. — Low sandy pine barrens. Sept.

2. **A. perennans,** Tuck. Culms slender, erect, or decumbent at the base, 1° – 2° high; leaves 2′ – 4′ long; panicle at length widely spreading, the

capillary short branches flower-bearing from the middle; glumes nearly equal, one third longer than the floret. — Damp shaded ground. July – August.

3. **A. scabra,** Willd. Culms 1° – 2° high; leaves 3′ – 6′ long; panicle large and open, the long (3′ – 6′) straight capillary scabrous branches closely flower-bearing at their summits; glumes nearly equal, the keel scabrous. — Low ground, common. June – July.

4. **A. canina,** L. Culms slender, erect; panicle small, oblong, with erect smooth branches; glumes lanceolate, nearly equal, rough-keeled; flowering glume short-awned below the middle; palet minute. — High mountains of North Carolina, and northward. July. — Culms 1° high.

§ 2. AGROSTIS proper. — *Palet manifest.*

5. **A. alba,** L. (Fiorin). Culms ascending from creeping rootstocks; leaves short, the ligule long, acute; panicle expanded in flower, contracted in fruit, mostly pale green; lower glumes nearly equal, the flowering one rarely short-awned. — Low ground. Introduced.

Var. **vulgaris,** Thurber. (RED TOP.) Panicle spreading, mostly purple; ligule short truncate; leaves commonly wider. — With the preceding. Introduced.

6. **A. arachnoides,** Ell. Culms and leaves very slender; panicle contracted, weak and drooping; glumes nearly equal, lanceolate, rough on the keel and margins; palet minute; flowering glume with two minute bristles at the truncated apex, and along a very fine awn on the back above the middle. — Fields and open woods in the upper districts. April – May. ♃ — Culms 1° high.

32. POLYPOGON, Desf. BEARD GRASS.

Flat-leaved chiefly annual grasses, with the 1-flowered spikelets stalked, and crowded in close clusters in a terminal spiked panicle. Glumes 5, equal, awned, and much longer than the floret, the flowering glume truncated and toothed at the apex, and often short-awned. Stamens 3. Stigmas 2. Grain elliptical, free.

1. **P. maritimus,** Willd. Culms simple (6′ – 8′ high); glumes pubescent, hispid on the keel, one third as long as the slender awns; flowering glume 4-toothed, unawned. — Coast of North and South Carolina. Introduced.

33. CINNA, L.

Tall perennial grasses, with broad leaves, bearing the 1-flowered compressed spikelets in a large compound terminal panicle. Glumes unequal, lanceolate, acute, the sharp keel hispid-serrulate. Floret raised on a stalk, smooth, its glume short-awned on the back below the apex. Stamen 1. Grain linear-oblong, free.

1. **C. arundinacea,** L. Culms 2° – 7° high, simple; leaves linear-lanceolate, ½′ wide; branches of the panicle in fours or fives, erect in fruit; spikelets often purplish, 2½″ – 3″ long. — Shaded swamps. July. — Panicle 6′ – 15′ long, rather dense. — Var. PENDULA, Gray. Culms and branches of the drooping panicle more slender; pedicels very rough; spikelets smaller; glumes thinner. — Mountains of North Carolina (*Curtis*)

34. CALAMAGROSTIS, Adans. REED BENT GRASS.

Tall perennial grasses, with simple erect culms, bearing a loose or contracted panicle of 1-flowered spikelets, and mostly the hairy pedicel of a second flower at the base of the palet. Glumes nearly equal, compressed-keeled. Floret with a ring of hairs at the base, its glume mostly awned on the back. Stamens 3. Grain free.

§ 1. DEYEUXIA. — *Rudiment of a second flower plumose: glumes membranaceous, the flowering one awned on the back.*

1. **C. Nuttalliana,** Steud. Culms 2° – 3° high; leaves rigid; panicle spike-like; glumes rather rigid, long-pointed, 3″ long, the keel very scabrous; awn hair-like, above the middle of the glume. — Wet ground. Sept.

2. **C. Canadensis,** Beauv. Culms 2° – 4° high; leaves flat, thin; panicle open in flower, closed in fruit; glumes smoothish, 1½″ long, short-pointed; awn hair-like, at the middle of the glume. — Mountains of North Carolina. July.

§ 2. CALAMORILFA. — *Rudiment of a second flower none: glumes chartaceous, awnless.*

3. **C. Curtissii,** Vasey. Culms 2° – 3° high; leaves narrow-linear, smooth; panicle contracted, loosely branched, 1° long; glumes 2″ long, the upper equalling the floret, the lower one third shorter; hairs of the floret few and short. — East Florida (*Garber, Curtiss*).

§ 3. AMOPHILA. — *Rudiment of a second flower plumose: glumes chartaceous, the flowering one mucronate or obscurely awned at the tip.*

4. **C. arenaria,** Roth. Culms 2° – 3° high, from long creeping rootstocks; leaves rigid convolute; panicles spiked, 5′ – 10′ long; glumes ½′ long, rigid, twice as long as the scanty hairs. — Sandy coast of North Carolina. Sept.

35. THURBERIA, Benth.

A low tufted annual grass, with erect branching culms, soft-hairy leaves, and 1-flowered spikelets in an erect narrow terminal panicle. — Lower glumes unequal, 3-nerved, hispid. Floret included, its glume smooth, coriaceous, armed below the apex with a stout bent dorsal awn; palet thin, with an awn-like pedicel at its base. Stamens 2. Grain free.

1. **T. Arkansana,** Benth. Culms 6′ – 12′ high. Leaves shorter than the culm; panicle 2′ – 3′ long. — Coast of West Florida, and westward. April.

36. STIPA, L. FEATHER GRASS.

Perennial grasses, with convolute leaves, and loose panicles of 1-flowered spikelets, with very long awns. Lower glumes membranaceous, nearly equal, awnless and persistent. Floret coriaceous, raised on an obconical bearded stalk, its glume with a twisted or contorted awn jointed with its apex. Stamens 3. Grain terete.

1. **S. avenacea,** L. Culms (1° – 2° high) clustered; leaves narrowly linear, rough, the lowest elongated; awn pubescent, bent in the middle, many times longer than the dark brown floret. — Dry soil, Florida, and northward. April.

37. ARISTIDA, L. WIRE GRASS.

Slender grasses, with narrow leaves, and mostly loosely racemose or panicled inflorescence. Spikelets 1-flowered. Lower glumes membranaceous, mostly unequal, acute or awned, the upper stipitate, coriaceous, involute, triple- (rarely single-) awned. Palet minute. Stamens 1 – 3. Grain included, free. — Awns (when dry) often bent or twisted.

§ 1. *Awn continuous (not jointed with the glume).*

* *Glume single-awned.*

1. **A. Floridana,** Vasey. Culms simple, 2° high; leaves long, convolute, bearded at the base; panicle 1° long, loosely branched; glumes equal, the upper truncate; awn compressed, curved. (Streptachne, *Flora.*) South Florida (*Blodgett*).

* * *Glume triple-awned.*

+ *Lateral awns short and erect.*

2. **A. dichotoma,** Michx. (POVERTY GRASS.) Culms forking, 6′ – 12′ high; leaves almost setaceous; panicles simple or compound, 2′ – 3′ long; glumes equal or (in var. Curtissii, Gray) unequal; middle awn spiral below, spreading, the lateral minute. — Dry sterile ground; common. August – Sept.

3. **A. ramosissima,** Engelm. Culms much branched, ½° – 1½° high; panicles few-flowered; lower glumes unequal, 8″ – 10″ long; middle awn coiled below, recurved, the lateral 1″ – 3″ long, rarely wanting. — West Tennessee (*Gattinger*).

4. **A. gracilis,** Ell. Culms much branched at the base, very slender; leaves flat; panicle very narrow, with distant appressed branches; middle awn straight, rather longer than the rough spotted lower glume, the lateral ones much shorter; glumes nearly equal. — Dry gravelly soil, Florida to North Carolina. August. — Culms 6′ – 12′ high.

5. **A. scabra,** Kunth. Culm scarcely any, the long (1½° – 3°) peduncle arising from a creeping rootstock; leaves radical, setaceously attenuate; panicle large, diffuse, the branches 2 – 5 in a cluster; spikelets appressed; glumes awn-pointed, the lower one longer; awns straight, erect, the lateral ones very short; stamens 2. — Sandy coast, Florida.

+ + *Awns long, equal, or nearly so.*

++ *United at the tip of the glume.*

6. **A. simpliciflora,** Chapm. Culms filiform, 2° high, forking; leaves flat, smoothish; racemes simple, straight, 6′ – 9′ long, loosely flowered; empty glumes 3″ long, nearly equal, awn-pointed, the lower one rough on the keel, longer than the floret; middle awn circular-curved near the base. — Damp pine barrens, West Florida.

7. **A. gyrans,** Chapm. Culms simple, 1° high; leaves convolute-filiform; panicle simple, with the branches short, appressed; empty glumes unequal, the lower 2″ long, the upper one a third longer, attenuate; flowering glume long-stipitate, the awns nearly equal, curved at the base. — Keys of Caximbas Bay, South Florida. Oct.

8. **A. oligantha,** Michx. Culms 1° - 2° high, branched, slender; leaves convolute; spikelets scattered, single or by pairs, in a simple terminal raceme, glumes nearly equal, ½′ - 1′ long; middle awn 1′ - 2′ long, rather longer than the lateral ones, circular-curved at the base. — South Carolina, and westward, rare. Sept.

9. **A. purpurascens,** Poir. Culms branching at the base, 1° - 2° high; leaves flat, glabrous, like the sheaths; panicle 1° - 1½° long, the branches short and erect; empty glumes unequal, the lower 5″ long, the upper shorter and equalling the floret; middle awn 1′ long, spreading. — Dry sterile soil, common. August.

10. **A. lanata,** Poir. Much like the last, but larger (2° - 4° high); leaves scabrous on the upper surface, the sheaths woolly; branches of the panicle longer, and often spreading. — With the preceding, but less common. July - August.

11. **A. palustris,** Vasey. Culms 3° - 4° high, simple or branching; leaves flat, glabrous; panicle long (1½° - 2°) and narrow, purple; empty glumes ½′ long, nearly equal; awns 10″ - 16″ long, the middle one spreading. (A. virgata, var. *Flora.*) — In and around shallow pine barren ponds, West Florida. August - Sept.

12. **A. virgata,** Trin. Culms simple, 2° - 4° high; leaves flat, soon convolute; panicle loosely or densely branched, 1° - 1½° long; empty glumes equal, or the lower shorter, 4″ long; awns spreading, 6″ long. (A. condensata, *Flora.*) — Barren sandy soil, near the coast, Florida to North Carolina. August - Sept.

13. **A. stricta,** Michx. Culms (2° - 3° high) tufted, simple, straight; leaves chiefly radical, filiform, involute, rigid, hairy at the base; panicle (1° long) spiked; glumes short-awned; lateral awns as long as the floret, the middle one one third longer. — Wet or dry pine barrens, very common. June - July.

++ ++ *Awns united above the glume.*

14. **A. spiciformis,** Ell. Glabrous; culms 1° - 2° high, simple; leaves erect, convolute-filiform; panicle closely spiked, 3′ - 5′ long; empty glumes long-awned, the upper twice as long as the lower one; awns united far above the glume, the middle one 1′ long, spreading. — Low pine barrens in the lower districts. August - Sept.

§ 2. *Awns united above the glume, and jointed with its summit.*

15. **A. tuberculosa,** Nutt. Annual; culms rigid, branching (1° - 1½° high); leaves flat; glumes nearly equal, bristle-awned; awns (2′ long) equal, twisted below, then widely spreading. — Dry ridges in the middle districts of Georgia. Sept. — Panicle simple.

38. MUHLENBERGIA, Schreb. Drop-seed Grass.

Spikelets 1-flowered. Glumes persistent, pointed or awned, equal, or the lower one smaller. Floret sessile in the glumes, commonly hairy at the base, deciduous with the enclosed grain, its glume 3-nerved and mucronate or awned at the apex. Stamens 3.

§ 1. MUHLENBERGIA proper. — *Spikelets commonly much crowded, in lateral and terminal panicles, short-stalked: culms branching, from hard scaly rootstocks: leaves flat.*

* _Flowering glume awnless._

1. **M. Mexicana,** Trin. Panicles oblong, dense; glumes unequal, lanceolate, ending in slender hispid awn-like points, the upper one as long as the awnless floret. (Agrostis lateriflora, *Michx.*) — Damp soil, North Carolina, and northward. June – July. — Culms ascending, much branched.

2. **M. glomerata,** Trin. Culms erect, simple or branched, 2° high; panicle long-peduncled, oblong-linear, interruptedly spicate, 2′ – 3′ long, the dense oblong clusters sessile and appressed; glumes nearly equal, awn-pointed, twice as long as the floret. – Statesville, North Carolina (*Hyams*).

3. **M. sobolifera,** Trin. Culms branching, 1° – 2° high; leaves broadly linear, 3′ – 5′ long; panicle simple, almost filiform, 2′ – 3′ long, the distant branches simple, erect; spikelets minute; glumes nearly equal, awnless, rather shorter than the floret. — Rocky woods in the upper districts. Sept.

* * _Flowering glume awned._

4. **M. sylvatica,** T. & Gr. Culms diffuse, branched (2° – 3° high); panicles contracted: floret as long as the nearly equal short-awned glumes, its awn 2 – 3 times as long. — North Carolina and Tennessee, in rocky woods. Sept.

5. **M. Willdenovii,** Trin. Culms sparingly branched, erect; leaves broadly linear; panicles linear; spikelets scattered; floret twice as long as the nearly equal short-pointed glumes, its awn 3 – 4 times as long as the spikelet. — Dry rocky soil in the upper districts. July – August. — Culms 3° high.

6. **M. diffusa,** Schreb. Culms decumbent, diffusely branched; panicles long and slender; glumes very small, the upper one truncated; awn of the floret twice as long as the spikelet. — Shaded waste places, common. August – Sept. — Culms 1° – 2° long.

§ 2. TRICHOCHLOA. — *Panicle terminal, diffuse, long-peduncled: spikelets on long hair-like stalks: culms tall and simple.*

7. **M. capillaris,** Kunth. Leaves rigid, elongated, convolute-filiform; panicle erect, the long and purple glossy branches and spikelets drooping; glumes nearly equal, half as long as the floret, the lower one awned; flowering glume 3-awned, with the middle awn many times longer than the spikelet. — Varies with both glumes long-awned. (M. filipes, *Curtis.*) — Sandy soil along the coast, and sparingly in the interior. August – Sept. — Culms 2° – 4° high.

8. **M. trichopodes,** Chapm. Culms and leaves filiform, elongated; panicle erect, oblong; spikelets linear, on spreading stalks; floret twice as long as the nearly equal awnless glumes, ribbed; its glume tipped with a short awn, and with the two lateral nerves slightly percurrent, hairy at the base. — Low pine barrens in the lower districts. Sept. ♃ — Culms 2° – 3° high. Panicle rarely purplish. Leaves flat.

9. **M. Reverchoni,** V. & S.? Glabrous; culms tufted, simple (2° high); leaves chiefly radical, short, flat, narrow-linear; panicle long-peduncled, sim-

ple, spreading; floret four times as long as the oval obtuse or acute glumes, and nearly equalling the rough awn. (M. cæspitosa, *Chapm.*) — Dry pine barrens, Florida, and westward.

39. BRACHYELYTRUM, Beauv.

A perennial erect grass, with a simple slender culm, flat lanceolate leaves, and a loose lanceolate simple panicle of large (½′ long) 1-flowered spikelets. Lower glume obsolete, the upper minute, persistent and awnless. Flowering glume rigid, rough with short bristly hairs, concave, 5-ribbed, tapering into a long straight awn, and enclosing the shorter 2-pointed palet. An awn-like pedicel of a second flower is applied to the back of the palet. Stamens and long stigmas 2. Grain linear.

1. **B. aristatum,** Beauv. — Dry rocky places. July. — Culms solitary, 2°-3° high.

40. AIRA, L.

Small tufted annual grasses (sparingly introduced), with linear or setaceous leaves, and diffuse panicles of small 2-flowered spikelets. Lower glumes membranaceous, acute, equal, longer than the florets; the flowering glume 2-cleft at the apex, faintly 3-5-nerved, dorsally awned in the middle. Stamens 3. Grain free.

1. **A. caryophyllea,** L. Culms 5′-8′ high; leaves narrow-linear; spikelets 1½″ long, short pedicelled; florets both awned. — Near Goldsborough, North Carolina (*Canby*).

2. **A. capillaris,** Host. Culms 8′-12′ high; leaves setaceous; spikelets ¾″ long, long-pedicelled; one floret unawned. — Gravelly hills, Rome, Georgia.

41. DESCHAMPSIA, Beauv.

Tall perennial grasses. Spikelets 2-flowered, and with a hairy rudiment of a third flower. Glumes shorter than the florets, scarious, acute; flowering glume truncate and denticulate at the apex, dorsally awned near the base. Stamens 3. Grain free.

1. **D. flexuosa,** Trin. Culms 1°-3° high; leaves chiefly radical, setaceous; panicle diffuse; flowering glume much shorter than the bent and twisted awn. — Mountains of Georgia and Carolina. July.

2. **D. cæspitosa,** Beauv. Culms tufted, 2°-4° high; leaves linear, flat; panicle oblong, with short erect branches; flowering glume as long as the straight appressed awn. — Georgia (*Leconte in Herb. Durand*).

42. TRISETUM, Pers.

Spikelets 2-several-flowered. Flowering glume compressed-keeled, usually bearing a bent awn below the 2-cleft or 2-pointed apex. Otherwise as in Aira. Spikelets in open or spiked panicles.

1. **T. palustre,** Torr. Smooth; culms weak (1°-1½° long); leaves flat, linear; panicle long and narrow, loose; spikelets 2-3-flowered; the lower flower awnless, the upper with a spreading awn and an awn-like rudiment at

the base, or rarely both flowers awnless. — Swamps. March – April. — Panicle pale, 4′ – 8′ long.

2. **T. molle,** Kunth. Soft downy; culms short (6′ – 8′); panicle (2′ – 3′ long) contracted, dense and spike-like; spikelets 2-flowered, the flowering glume of both flowers with a spreading awn. — Mountains of North Carolina.

43. DANTHONIA, DC.

Tufted grasses, with racemose or panicled spikelets, and rough or bearded flowers. Spikelets 3 – many-flowered. Glumes nearly equal, membranaceous, longer than the florets, awnless. Flowering glume rigid, concave, many-nerved, bearded below, sharply 2-toothed at the apex, bearing an intermediate awn, which is flattened and twisted near the base. Stamens 3. Grain oblong, free.

1. **D. spicata,** Beauv. Spikelets 4 – 8, racemose, 7-flowered; flowering glume rough with short rigid hairs, much longer than the lanceolate-subulate teeth; culms (10′ – 18′ high) slender; leaves short and narrow, soon involute. — Dry barren soil. June – July. — Raceme 1′ – 2′ long.

2. **D. sericea,** Nutt. Spikelets numerous, panicled, 7-flowered; flowering glume white with long silky hairs, as long as the slender awn-pointed teeth; culms 2° high; sheaths of the linear leaves woolly above. — Dry sterile soil. April.

3. **D. compressa,** Austin. Like No. 1, but taller; leaves longer; panicle larger and more open; teeth of the flowering glume longer and more slender. — Summit of Roan Mountain, North Carolina (*Chickering*), and northward.

44. HOLCUS, L. SOFT GRASS.

Spikelets 2-flowered, the flowers short-pedicelled, the lower one perfect and unawned, the upper triandrous and awned. Glumes 2, thin, keeled, enclosing the florets. Palet and glume thin, equal. Grain free.

1. **H. lanatus,** L. Soft-downy, erect (2° high); panicle oblong (2′ – 4′ long); awns recurved. — Low ground. Introduced.

45. ARRHENATHERUM, Beauv. OAT GRASS.

Tall grasses, with flat leaves, and spreading panicles with clustered or whorled branches. Spikelets 2-flowered, with the awn-like rudiment of a third flower; the lower one staminate, the upper perfect. Glumes membranaceous, concave, the upper one as long as the florets. Flowering glume of the lower flower with a bent dorsal awn below the middle. Stamens 3.

1. **A. avenaceum,** Beauv. Culms smooth, 2° – 3° high; leaves broadly linear; panicle narrow, whitish, 8′ – 10′ long; glumes scarious. — North Carolina (*Curtis*). Introduced. May. ♃.

46. SPARTINA, Schreb. MARSH GRASS.

Rigid perennial grasses, growing chiefly in saline marshes, with simple culms, concave or convolute leaves, and flattened 1-flowered spikelets, closely imbricated in two rows on one side of the triangular rachis, forming appressed or spreading alternate spikes. Empty glumes 2, unequal, acute or short-awned, commonly bristly-serrulate on the keel; the upper mostly longer than the awnless floret. Palet thin, shorter than the glume. Stamens 1 – 3. Styles long, united below, or nearly distinct. Grain free.

* *Leaves convolute, rush-like.*

1. **S. juncea,** Willd. Spikes 3 – 9, remote, erect; upper glume 2 – 3 times longer than the lower one; flowering glume, and sometimes the palet, rough above. — Sandy or marshy places along the coast. July – August. — Culms 1° – 3° high. Leaves pungent. Spikes 1′ – 2′ long. Stamens 1 – 3.

2. **S. junciformis,** Engelm. & Gray. Spikes 15 – 30, closely imbricated in a cylindrical spike, the lowest rather distinct; upper glume one third longer than the lower one, obtuse, mucronate; flowering glume rough on the back, the palet smooth. — Sandy saline swamps, West Florida. July – August. — Culms (2° – 4° high) and rush-like leaves very rigid. Common spike 4′ – 6′ long. Proper spikes 4″ – 6″ long.

* * *Leaves concave or flat.*

3. **S. polystachya,** Willd. Spikes numerous, spreading; upper glume and nearly equal floret slightly roughened, 2 – 3 times longer than the lower one; leaves broad (½′ – 1½′), concave, very rough on the margins. — Brackish marshes, Florida to North Carolina. August – Sept. — Culms stout, 4° – 8° high. Spikes 2′ – 3′ long, racemed.

4. **S. glabra,** Muhl. Spikes numerous, appressed to the common rachis; upper glume linear, obtuse, 3 times the length of the lower one, glabrous; leaves concave, smooth on the margins. — Salt marshes, Florida, and northward. August – Sept. — Culms 2° – 4° high. Leaves narrower than the last, elongated.

5. **S. cynosurioides,** Willd. Spikes 5 – 20, erect, 3′ – 4′ long; glumes awned, the upper twice as long as the lower one; flowering glume hispid on the keel; palet smooth, obtuse. — Marshes, Tennessee. August. — Culms 3° – 4° high. Leaves soon convolute.

47. GYMNOPOGON, Beauv.

Low perennial grasses, with short and crowded distichous spreading leaves. Spikelets appressed, scattered on the straight and at length reflexed branches of the simple panicle, consisting of 1 – 3 perfect flowers and an awn-like pedicel above. Empty glumes 2, subulate, hispid-serrulate. Floret shorter than the glumes, its glume awned under the apex. Stamens 3.

1. **G. racemosus,** Beauv. Culms (1° high) rigid; leaves lanceolate (1½′ – 2′ long); branches of the panicle bearing the linear spikelets from the base to the summit; spikelets 1-flowered; awn 2 – 3 times the length of the floret. — Dry sandy soil. Sept. – Oct.

2. **G. brevifolius,** Trin. Culms and panicle usually more slender; spikelets 1 – 3-flowered; oftener borne above the middle of the branches; awn shorter than the floret; otherwise like the preceding. — Low pine barrens. Sept. – Oct.

48. BOUTELOUA, Lag.

Spikelets crowded in two rows on one side of the flattened rachis of single or racemose spikes, 1 – 3-flowered, the lower flower perfect, the upper ones sterile or rudimentary, awned. Glumes keeled, the lower one shorter. Flowering glume 3-nerved and 3-toothed; the palet 2-nerved, 2-toothed. Stamens 3.

1. **B. hirsuta,** Lag. Annual; culms 1° – 1½° high, filiform; leaves very narrow, papillose-ciliate; spikes 1 – 2, many-flowered; upper empty glume papillose-hispid. Sterile flower longer than the floret. — South Florida (*Garber*).

2. **B. racemosa,** Lag. Perennial; culms 1° – 3° high; leaves rigid, glabrous; spikes numerous, 4 – 12-flowered; upper empty glume scabrous on the keel; sterile flower shorter than the floret. — Bainbridge, Georgia (*Feay*), and westward.

49. CHLORIS, Swartz.

Chiefly tropical grasses, with compressed culms and sheaths, distichous flat or folded obtuse leaves, and digitate rarely single spikes. Spikelets 2 – 3-flowered, imbricated or crowded in 2 rows on one side of the triangular rachis; the lowest flower perfect and sessile, the upper ones staminate or neutral, and stalked. Empty glumes 2, membranaceous, persistent, the upper (exterior) short-awned. Floret coriaceous, its glume boat-shaped, mucronate-awned under the apex, the palet (mostly wanting in the sterile flowers) unawned. Stamens 3. Grain free.

1. **C. petræa,** Swartz. Culms (1° – 2° high) clustered, erect; leaves glaucous; spikes 3 – 5; spikelets 2-flowered; glumes hispid, the upper oblong, deeply emarginate; flowering glume dark brown, hairy on the keel and margins, bearded at the base; sterile flower neutral, club-shaped, awnless. — Damp soil along the coast, Florida to North Carolina. May – August. ♃ — Leaves 3′ – 5′ long. Spikes erect. Spikelets roundish.

2. **C. glauca,** Vasey. Culms stout (3° – 5° high), and, like the broad (6″ – 8″ wide) leaves, smooth and glaucous; spikes about twenty; spikelets roundish, 2-flowered; glumes hispid, the upper lanceolate, entire; floret dark brown, smooth; upper flower obovate, short-awned. — Brackish marshes, West Florida. August – Sept. ① — Culms ½′ wide at the base. Leaves 1½° – 2° long.

3. **C. Floridana,** Vasey. Culms slender (2° high); leaves (2′ – 4′ long) glaucous; spikes single or by pairs; spikelets light brown, 3-flowered, the middle flower staminate; glumes smoothish, truncate, oblong; flowering glume of the perfect flower hairy on the keel and margins, distinctly awned; sterile flowers obovate, smooth, the lower one short-awned. — Dry pine barrens, Middle Florida. July – Sept. ♃ — Spikelets larger than in the two preceding.

50. CYNODON, Richard. BERMUDA GRASS.

Diffusely creeping perennial grasses, with short and erect flowering culms, and flat leaves. Spikes digitate, 1-sided. Spikelets crowded, awnless, 2-flowered; the lower flower perfect, the upper reduced to an awn-like pedicel. Glumes 2, membranaceous, nearly equal. Floret membranaceous, its glume large and boat-shaped. Stamens 3. Grain free.

1. **C. Dactylon,** Pers. Spikes 3–5, filiform, purple; glumes rough-keeled; floret longer than the glumes, its glume hairy on the keel; anthers and stigmas purple. — Waste places. Introduced. — Flowering culms 6′–12′ high. Leaves 2′–4′ long. Spikes 1′–2′ long, filiform, sterile.

Var. **maritimus,** Nees. Culms stouter (6′ high); leaves shorter and broader, the sheaths imbricated; spikes 6–8, fruitful. — Sandy coast, South Florida. — Leaves 1′ long.

51. CTENIUM, Panzer.

Spikelets in two rows on one side of the rachis of the terminal solitary spike. Glumes 7, the four lower and two upper ones sterile, the fifth fertile. Lowest glume minute, second rigid, awned on the back, as long as the spikelet, third, fourth, and fifth awned at the tip, sixth and seventh unawned, neutral. Stamens 3. Grain free.

1. **C. Americanum,** Spreng. Culms 2°–4° high, from strong perennial roots, simple, tufted; leaves linear, scabrous and glaucous on the upper surface; spikes 3′–4′ long, mostly curved; spikelets spreading (not imbricated); fertile glume densely ciliate. — Damp pine barrens. August–Sept.

52. ELEUSINE, Gært. CROWFOOT GRASS.

Annual creeping or spreading branching grasses, with flat leaves and digitate rarely single spikes. Spikelets 2–several flowered, crowded on one side of the flattened rachis; the uppermost flower imperfect. Glumes compressed-keeled, membranaceous, obtuse or pointed. Floret boat-shaped, pointed. Stamens 3. Grain roundish, rugose, free.

1. **E. Ægyptiaca,** Pers. Culms ascending from a creeping base; leaves fringed; spikes commonly 4, awn-pointed; spikelets 3–4-flowered. — Cultivated ground, common. Introduced. — Culms numerous, 1° high. Spikes 1′–2′ long.

2. **E. Indica,** Gært. Culms (6′–18′ high) flattened; leaves flat; spikes 2–several, the lower ones sometimes scattered (2′–4′ long); spikelets 6-flowered. — Cultivated ground, very common. Introduced.

53. LEPTOCHLOA, Beauv.

Spikelets sessile, loosely borne on one side of the filiform rachis of the long branch-like racemose spikes, 3–many-flowered. Glumes unequal, membranaceous, keeled, the flowering ones 3-nerved, rarely awned, longer than the palea. Stamens 3. Grain oblong, free.

1. **L. mucronata,** Kunth. Culms 2°–3° high; sheaths of the broad (4″–6″ wide) rough leaves hairy; spikes very numerous, in an elongated raceme, 3′–6′ long, spreading; spikelets small, 3–4-flowered; glumes mucronate, longer or shorter than the florets; flowering glume obtuse or emarginate. — Cultivated fields. August–Sept. ①.

54. DIPLACHNE, Beauv.

Spikelets rather loosely flowered. Flowering glumes 2-toothed, mucronate or awned between the teeth. Otherwise like the preceding. — Margins of the flowering glumes fringed (except the last).

1. **D. dubia,** Benth. Culms 2° high, slender; leaves elongated, filiform, with smooth sheaths; spikes 6 – 10, somewhat corymbose; spikelets distant on the filiform rachis, 6-flowered; glumes lanceolate, nearly equal, serrulate on the keel, shorter than the awnless soon spreading florets; flowering glumes truncate or emarginate. — South Florida.

2. **D. fascicularis,** Beauv. Culms $\frac{1}{2}$° – 4° long, mostly prostrate and rooting at the lower joints, much branched; raceme partly included in the sheaths of the elongated leaves; spikes numerous, approximate, erect, 3′ – 5′ long; spikelets lanceolate, 8 – 10-flowered; glumes unequal, shorter than the florets; flowering glumes prominently awned. — Brackish swamps along the coast. Sept. ①.

3. **D. Domingensis,** (Link.?) Culms erect, simple, straight and slender; leaves narrowly linear or filiform, shorter than the culm; spikes 6 – 12, scattered, exserted; spikelets lanceolate, 6 – 8-flowered; glumes unequal, acute, rough-keeled; flowering glumes minutely awned. — South Florida. Oct. — Culms 1° – 1$\frac{1}{2}$° high.

4. **D. rigida,** Munro. Culms low (2′ – 4′ high), ascending, rigid; leaves subulate, $\frac{1}{2}$′ – 1$\frac{1}{2}$′ long, involute and rigid; spike 1′ – 1$\frac{1}{2}$′ long, lanceolate, dense, 1-sided; spikelets linear, acute, 5 - 11-flowered; glumes serrulate on the keel; flowering glume obtuse, emarginate or mucronate, glabrous. (Poa rigida, *L.*) — Waste ground, introduced in ballast. April – May.

55. TRIODIA, R. Br.

Perennial grasses, with tall, erect, simple culms, from a thick and scaly rootstock, elongated rigid leaves, and ovate or lanceolate 5 – 7-flowered stalked spikelets, disposed in a simple or compound panicle. Glumes 2, smooth, emarginate, shorter than the crowded florets. Flowering glumes 2-cleft, shortly 3-awned by the percurrent hairy nerves, bearded at the base. Stamens 3. Grain obovate-oblong, free.

1. **T. cuprea,** Jacq. Panicle ample and diffuse, or contracted and erect, bearded in the axils; spikelets terete, lanceolate, mostly purple; flowering glume with two awn-like teeth similar to the three short awns — Woods and margins of fields. August – Sept. — Culms 3° – 5° high. Sheaths often hairy.

2. **T. ambigua,** Vasey. Panicle short, nearly simple, smooth in the axils, clammy; spikes ovate or roundish, compressed; teeth of the flowering glume obtuse, wider than the three short awns. — Low pine barrens, Florida to South Carolina. August. — Culms 2° – 3° high.

3. **T. eragrostoides,** V. & S. Panicle large, diffuse, the branches single and drooping; spikelets oblong, compressed, 6 – 10 flowered; flowering glumes truncate and finely denticulate, slightly awned; culms tall and slender; leaves 1″ – 2″ wide. — Florida, and westward.

4. **T. stricta,** Vasey. Panicle closely spiked, 6′ – 12′ long; spikelets ovate-oblong, 5 – 10-flowered, barely longer than the pointed glumes; flowering glumes minutely awned; culms strictly erect, 3° – 6° high. — Mississippi (*Tracy*), and westward.

56. TRIPLASIS, Beauv.

Low tufted fibrous-rooted annual grasses, with branching culms, linear-subulate leaves, and few loosely 2 – 4-flowered spikelets, disposed in simple lateral and terminal panicles or racemes. Glumes 2, lanceolate, smooth. Floret hairy on the margins; flowering glume 2-cleft, with a bearded or plumose awn between the teeth; the palet concave, 3-toothed. Stamens 3. Grain free.

1. **T. Americana,** Beauv. Culms erect, 1° – 2° high; leaves and sheaths hairy; awn of the flowering glume plumose, much longer than the awn-pointed teeth. (Uralepis cornuta, *Ell.*) — Dry sandy soil, Florida to North Carolina. August – Sept. ♃.

2. **T. purpurea.** Culms procumbent or ascending, 1° – 1½° long; leaves and sheaths smooth or roughish; awn of the flowering glume bearded, about as long as the obtuse teeth. — Drifting sands along the coast. August – Oct. — Leaves 1′ – 4′ long. Spikelets bright purple.

3. **T. sparsiflora,** Chapm. Culms rigid (6′ – 12′ high); leaves short; racemes axillary and terminal, few-flowered; spikelets loosely 2 – 4-flowered; glumes nearly equal, the lower one 2-toothed, the upper acute; flowering glume oblong, ciliate, twice the length of its awn, the palet villous above the middle. — Sandy coast at Punta Rassa, South Florida. Oct.

57. BROMUS, L. BROME GRASS.

Spikelets large, loosely panicled, 3 – many-flowered. Glumes membranaceous, unequal, commonly keeled. Flowering glume usually awned under the 2-cleft apex, convex on the back, about 7-nerved at the base. Stamens 3. Grain flattened and grooved on the inner face, and adherent to the palet. Culms simple. Leaves commonly broad and flat.

1. **B. ciliatus,** L. Perennial; panicle diffuse, the slender drooping branches mostly in pairs; spikelets lanceolate after flowering, 10 – 12-flowered; lower glume 1-nerved, the upper 3-nerved; flowering glume 7-nerved, hairy along the margins, or, in var. PURGANS, Gray, hairy all over, about twice as long as the awn; culms 2° – 4° high; leaves and sheaths smooth or downy. — River banks and rich soil, chiefly in the upper districts. June.

2. **B. secalinus,** L. (CHEAT or CHESS.) Annual; panicle spreading, with clustered, at length drooping branches; spikelets (½′ – 1′ long) 8 – 10-flowered, oblong-ovate; lower glume 5-nerved, the upper 7-nerved; the flowering glume convex, 7-nerved, awnless or short-awned; culms 1° – 2° high; leaves and sheaths smooth or downy. — Grain fields, etc. Introduced.

3. **B. racemosus,** L. Panicle erect, contracted in fruit; flowers larger, the flowering glume longer than the upper one, barely longer than its awn; otherwise like B. secalinus. — Grain fields. Introduced.

4. **B. sterilis,** L. Annual; culms ascending (1° – 2° long); leaves downy; panicle ample, drooping; spikelets thin, loosely 5 – 9-flowered, the long-awned flowers linear-subulate. — Waste ground. Introduced.

58. FESTUCA, L. Fescue Grass.

Spikelets panicled, 3 – many-flowered, the rachis jointed. Glumes unequal, mostly keeled. Flowering glumes naked, chartaceous, rounded on the back, 3 – 5-nerved, entire and mostly acute or bristle-awned at the tip. Stamens 1 – 3. Grain adherent. — Culms simple. Leaves linear or setaceous. Panicles terminal.

* *Annual: panicles contracted: spikelets awned: leaves filiform or setaceous.*

1. **F. Myurus,** L. Culms erect, very slender, included in the sheaths of the bristle-like leaves; panicle elongated, linear, 1-sided, partly included in the sheath of the uppermost leaf, the scattered branches appressed; spikelets compressed, 4 – 6-flowered; awn 2 – 3 times the length of the subulate sparsely hairy glume. Stamen 1. — Dry sandy soil, Florida to North Carolina. March – April. — Culms 6′ – 12′ high. Panicle pale, 4′ – 6′ long.

2. **F. sciurea,** Nutt. Culms taller (10′ – 20′); panicle long-exserted; spikelets 5 – 7-flowered; awn 3 – 4 times as long as the glume; otherwise like the preceding. — Dry sandy soil, Florida, and westward. Feb. – March.

3. **F. tenella,** Willd. Culms (2′ – 12′ high) erect or ascending; leaves narrowly linear or filiform; panicle exserted, simple, spiked, or the branches slightly spreading, mostly purple; spikelets crowded, compressed, oblong, 8 – 12-flowered; awn not longer than the subulate hispid glume. — Dry sandy soil, Florida, and northward. Feb. – April.

* * *Perennial: panicles spreading: spikelets awnless: leaves mostly linear.*

4. **F. ovina,** L. Culms 1° – 1½° high; panicle contracted, spike-like; spikelets mostly 4-flowered; awns short or wanting. — Waste ground in the upper districts.

Var. **duriuscula,** Koch. Panicles often spreading, 1-sided; spikelets larger, 6 – 8-flowered; glumes smooth or scabrous. — Fields and roadsides. Introduced.

5. **F. elatior,** L. Culms 2° – 4° high; leaves linear, smooth; panicle long, narrow, erect, the erect branches bearing the loosely 5 – 10-flowered spikelets throughout; flowering glume oblong-lanceolate, barely pointed. — Low ground in the upper districts. Introduced.

6. **F. nutans,** Willd. Culms 2° – 4° high, and like the broadly linear leaves rough, or the latter hairy; panicle 1-sided, simple, erect or bending, the few branches mostly in pairs, remote, bearing few ovate 5 – 6-flowered spikelets near their summits, at length reflexed; glumes rough on the back, acute; flowering glume ovate, barely pointed. — Rich woods and banks. August.

59. MELICA, L. Melic Grass.

Spikelets in panicles, consisting of 2 – 8 awnless perfect flowers enclosing 1 – 3 imperfect ones. Glumes unequal, membranaceous, convex, scarious on the margins, 7–9-nerved. Florets similar, the glume scarious at the apex. Stamens 3. Grain free. — Culms simple. Root perennial.

1. **M. mutica,** Walt. Culms slender, 1°–2° high; leaves and sheaths pubescent or glabrous; panicle composed of few simple few-flowered branches, or reduced to a simple raceme; spikelets racemose, nodding, 2-flowered; glumes nearly equalling the spikelet, obtuse or acute; sterile flowers obovate. — Rich open woods. April–May.

2. **M. diffusa,** Pursh. Culms 2°–4° high; panicle compound, many-flowered; spikelets mostly 3-flowered; glumes shorter than the spikelet; flowering glume acute. — Carolina (*Pursh*).

60. GLYCERIA, Brown.

Smooth perennial marsh or aquatic grasses, with flat leaves and few- or many-flowered spikelets disposed in a simple or compound panicle. Rachis jointed. Glumes membranaceous, obtuse, persistent. Florets somewhat chartaceous, early falling away with the separating joints of the rachis; the glume naked, convex, 5–7-nerved. Stamens 2–3. Grain free, oblong.

* *Panicle contracted.*

+ *Spikelets terete,* 5–13-*flowered: flowering glume scabrous.*

1. **G. fluitans,** R. Brown. Culms thick, ascending from a creeping base, 1°–5° long; leaves long, broadly linear; panicle long and narrow; spikelets linear, pale, loosely 7–13-flowered (1′ long); flowering glume obtuse, or slightly 3-lobed at the scarious apex, roughish, 7-nerved. — Shallow water in the upper districts, and northward. June–July. — Panicle 1° long.

2. **G. acutiflora,** Torr. Culms slender, ascending, 2°–3° long; leaves linear; panicle simple, the short branches distant and erect; spikelets 5–12-flowered; florets subulate; flowering glume acute, shorter than the long-pointed palet. — Shallow ponds, Tennessee. June.

+ + *Spikelets more or less compressed,* 3–7-*flowered.*

3. **G. obtusa,** Trin. Culms stout, 1°–2° high; leaves long, linear; panicle oblong, dense, 2′–3′ long, the branches in pairs or threes; spikelets 5–7-flowered; flowering glume obtuse, 5-nerved. — Coast of North Carolina.

4. **G. elongata,** Trin. Culms slender, 2°–3° long; leaves long, narrowly linear, rough; panicle racemose, drooping, 1° or more long, the branches single; spikelets 2–4-flowered, ovate, obtuse; flowering glume 5-nerved. — Mountains of North Carolina.

* * *Panicle open or diffuse.*

5. **G. nervata,** Trin. Culms erect; panicle diffuse, the branches at length drooping; spikelets purplish, very numerous, ovate-oblong, 5–6-flowered, nearly terete; flowering glume oblong, obtuse, 7-nerved. — Swamps and river banks. July. — Culms 2°–3° high. Spikelets 2″ long.

6. **G. pallida,** Trin. Culms erect or ascending; panicle narrow, nearly simple, with the branches erect; spikelets pale, oblong-linear, 5–9-flowered, nearly terete; flowering glume oblong, minutely 5-toothed, 7-nerved. — Shallow water, North Carolina and Tennessee. July. — Culms 1°–3° long. Spikelets 3″ long.

7. **G. grandis,** Watson. Culms tall (3° – 5° high), smooth; leaves rough, broadly linear; panicle very large, diffuse; spikelets small (2″ long), lanceolate, 4 – 8-flowered; flowering glume entire. — Swamps, Tennessee (*Gattinger*) July.

61. DIARRHENA, Raf.

A smooth perennial grass, erect from a creeping rootstock, the simple culm naked above, and ending in a simple panicle of few 3 – 5-flowered spikelets. — Glumes coriaceous, unequal. Florets longer than the glumes; flowering glume coriaceous, its 3 strong nerves uniting to form a stout subulate point. Stamens 2. Grain large, free.

1. **D. Americana,** Beauv. (Festuca diandra, *Michx.*) Culms 2° – 3° high; leaves broad and flat; spikelets 2″ – 3″ long. — Shady woods and banks, Tennessee. Sept.

62. DACTYLIS, L. Orchard Grass.

Perennial grasses, with simple culms, keeled leaves, and 2 – 7-flowered spikelets crowded in a 1-sided glomerate panicle. Glumes and flowering glumes herbaceous, keeled, awn-pointed, rough-ciliate on the keel, the latter 5-nerved. Stamens 3. Grain free.

1. **D. glomerata,** L. — Around homesteads. Introduced. May – June. — Culms 2° – 3° high. Leaves and sheaths scabrous. Spikelets in close clusters at the end of the short branches, 2 – 4-flowered. Glumes and florets lanceolate.

63. EATONIA, Raf.

Slender erect and tufted grasses, with narrow leaves, and small naked pale spikelets in a racemose or spicate panicle. Spikelets rarely awned, 2 – 5-flowered, the uppermost flower usually an awn-like pedicel. Glumes membranaceous, shorter than the florets, the lower one linear and 1-nerved, the upper obovate, 3-nerved. Flowering glume obtuse, longer than the palet. Stamens 3. Grain linear-oblong.

1. **E. obtusata,** Gray. Panicle dense, spike-like, the 2-flowered spikelets much crowded on the short erect branches; glumes rough on the back, the upper one round-obovate, somewhat truncate, rather rigid; flowering glume lanceolate-oblong, obtuse, rough-keeled. — Dry soil, Florida, and northward. April – May. ♃ and ① — Culms 1° – 2° high.

2. **E. Pennsylvanica,** Gray. Panicle slender, loose, the 2 – 3-flowered spikelets scattered on the slender branches; glumes slightly roughened on the back, the upper one obovate, obtuse, or abruptly acute; flowering glumes obtuse; leaves flat, with the sheaths smooth, rough, or downy. — Upper districts. April. ♃ — Culms 1° – 2° high.

3. **E. filiformis,** Vasey. Culms 1° – 2° high, 2 – 3-jointed, little exceeding the involute-filiform radical leaves; panicle linear, loosely branched, 6′ – 12′ long; spikelets 2-flowered, the lower floret smoothish, the upper often bearing a spreading awn under the apex of its glume; sterile flower a stalked glume. (E. Pennsylvanica, var., *Flora.*) — Sandy coast, West Florida to South Carolina. March.

4. **E. Dudleyi,** Vasey. Panicle racemose, the short branches erect; spikelets 2-flowered; glumes nearly equal, the lower oblong, the upper elliptical, with broad scarious margins, obtuse or apiculate; florets obtuse. — Open woods in the upper districts. — Culms 1° - 2° high. Leaves short and flat.

64. POA, L. MEADOW GRASS.

Grasses with tufted culms, smooth flat and tender leaves, and compressed few-flowered spikelets in loose or contracted panicles. Glumes unequal shorter than the florets. Flowering glume nearly membranaceous, keeled scarious on the margins, awnless, 5-nerved, the three more prominent nerves mostly hairy or woolly below; palet 2-toothed, falling at maturity with the lower one. Stamens 2 - 3. Stigmas plumose. Grain free.

* *Branches of the panicle single, or in pairs.*

1. **P. annua,** L. Annual; culms tender, spreading, 6′ - 10′ high; leaves linear, 3′ - 6′ long, 1½″ wide; panicle ovate, the smooth branches at length reflexed; spikelets ovate, about 5-flowered; glumes obtuse or emarginate, half as long as the sparsely hairy obtuse florets. — Yards and gardens, Florida, and northward. Feb. - March. Introduced.

2. **P. cristata,** Walt.? Annual; culms erect, 6′ - 10′ high; leaves linear, subulate, 1′ long, ½″ wide; panicle linear or lanceolate, dense, the lowest of the rough branches spreading; spikelets 3 - 5-flowered; flowering glume with a prominent crest-like fringe on the back, barely longer than the acute glumes. — Dry soil around Quincy, Middle Florida. April.

3. **P. flexuosa,** Muhl. Perennial; culms weak, mostly erect, 1° - 1½° high; leaves narrowly linear; branches of the panicle by pairs (1½′ - 2′ long), capillary, widely spreading; spikelets 2 - 4 near the summit of each branch, pale, oblong, 3 - 4-flowered; glumes acute, the lower 1-nerved, the upper 5-nerved; flowering glume compressed and very obtuse at the apex, hairy on the nerves. — Rich shaded soil, Florida, and northward. May.

* * *Branches of the panicle 3 - 6 in a cluster: perennials.*

4. **P. Wolfii,** Scribner. Culm slender, 2° high; leaves narrow-linear; panicle loose, nodding, the branches in pairs or threes; spikelets ovate, 3 - 5-flowered; empty glumes 3-nerved; flowering glumes 5-nerved, lanceolate, keeled, the margins and keel villous, and a copious web at the base. — Cedar glades of Tennessee (*Gattinger*).

5. **P. pratensis,** L. Culms terete, ascending from a creeping base, smooth; leaves mostly abruptly pointed; branches of the panicle expanding, about 5 in a cluster; spikelets ovate, 3 - 5-flowered, crowded; florets closely imbricated; flowering glume acutish, strongly nerved, hairy. — Rich soil, mostly around dwellings. Introduced. May. — Culm 1° - 2° high.

6. **P. trivialis,** L. Culms terete, not creeping at the base, scabrous; leaves acute; spikelets ovate, mostly 2-flowered; empty glumes strongly keeled, the lower 1-nerved, the upper 3-nerved; flowering glumes 5-nerved, fringed on the keel, otherwise smooth. — Tennessee (*Gattinger*).

7. **P. compressa,** L. Culms ascending from a creeping base, geniculate, and, like the sheaths, compressed; panicle contracted, 1-sided, the short

erect branches 2 – 4 in a cluster; spikelets 4 – 8-flowered; flowering glume rather obtuse, hairy below, faintly nerved. — Dry sterile soil. Introduced. May. — Culms 1° high. Leaves bluish green.

8. **P. brevifolia,** Muhl. Culms erect (2° high); leaves broadly linear, abruptly acute, those of the culm few and short; branches of the panicle few, mostly by pairs, bearing the 3-flowered spikelets near the end; flowering glume obtuse, faintly nerved, slightly hairy on the back. — Rich soil, chiefly in the upper districts. April.

9. **P. sylvestris,** Gray. Culms compressed (2° high); leaves thin; panicle long-peduncled, ovate, the branches 5 – 6 in a cluster, roughish; spikelets ovate, loosely 3-flowered, the flowering glume villous on the margins and keel. — Mountains of Georgia and Tennessee. June.

10. **P. alsodes,** Gray. Culms 1° – 2° high; leaves linear, 2′ – 5′ long; panicle open, bearing the 2 – 4-flowered spikelets above the middle of the setaceous branches, these mostly in fours; glumes acute, lanceolate, the flowering ones hairy near the base; sterile flower an awn-like rudiment. — Summits of the mountains of North Carolina.

65. ERAGROSTIS, Beauv.

Spikelets few – many-flowered, compressed. Flowering glumes 3-nerved, not hairy nor woolly. Palet mostly persistent after the fall of the glume. Otherwise as in Poa. — Culms often branched. Leaves and sheaths smooth or hairy.

* *Panicles contracted: spikelets in clusters or racemes: annual.*

+ *Culms prostrate and creeping, diffusely branched.*

1. **E. reptans,** Nees. Culms filiform, the flowering branches erect (4′ – 6′ high), leaves short (1′ – 2′ long), linear; sheaths downy at the base; panicle small (2′ – 3′ long), ovate or oblong, often contracted; spikelets linear, 10 – 30-flowered, nearly sessile, imperfectly diœcious. — Low ground. August – Sept. — Plant pale green.

+ + *Culms branching, erect or ascending.*

2. **E. megastachya,** Link. Culms prostrate and geniculate at the base, ascending; leaves linear; sheaths smooth; panicle oblong or pyramidal, contracted or spreading; spikelets oblong or at length linear (3″ – 5″ long), 10 – 30-flowered; flowering glume ovate, obtuse. — Cultivated or waste grounds. Introduced. July – August.

3. **E. Brownei,** Kunth. Low (6′ – 12′ high), tufted; leaves linear, attenuate; panicle simple, racemose, the short branches spreading; spikelets linear-lanceolate, nearly sessile, 20 – 30-flowered; flowering glume ovate, acutish, 3-nerved, the palet ciliate. — East Florida (*Garber*).

4. **E. oxylepis,** Torr. Culms clustered, 4′ – 8′ high, leaves 1′ – 4′ long; panicle contracted, interrupted, racemose; spikelets crowded, ovate, flat, 5 – 7-flowered; flowering glume acuminate, strongly 3-nerved. — Memphis, Tennessee, and westward. April.

5. **E. conferta,** Trin. Culms erect, stout, 1° – 3° high; leaves linear; sheaths smooth; panicle elongated (1° – 2° long), linear or lanceolate, the very

numerous clustered branches and small oblong 8 – 10-flowered spikelets erect or appressed; flowers minute, membranaceous, rather distant on the rachis; flowering glume obtuse, 3 nerved. (Poa conferta, *Ell.*) — River banks, Florida to South Carolina. August – Sept. — Panicle whitish. Spikelets 1″ – 1½″ long.

* * *Panicles open, spreading: spikelets single.*

+ *Small annuals.*

6. **E. ciliaris,** Link. Culms slender, prostrate or ascending, geniculate; leaves (2′ – 3′ long) linear, bearded at the throat; panicle spiked, cylindrical, the minute (½″ long) ovate spikelets densely crowded on the short appressed branches, 5 – 7-flowered; flowering glume obtuse; the palet fringed on the margins with bristly hairs. — Varies with the panicles open and diffuse, and the spikelets and flowers more scattered on the smooth rachis. — Waste places. Introduced. — Culms 6′ – 12′ long. Spikelets purple.

7. **E. Purshii,** Schrad. Culms slender, ascending, geniculate near the base, 6′ – 12′ long; leaves narrowly linear, the sheaths bearded at the throat; panicle 3′ – 6′ long, the lowest of the widely spreading branches whorled; spikelets linear, 5 – 10-flowered, purple or pale, the lateral ones appressed, and mostly longer than their pedicels; flowering glume ovate, 3-nerved. — Waste places and cultivated grounds, common. June – Sept.

8. **E. Frankii,** Meyer. Culms branched at the base, in tufts, 5′ – 10′ high; panicle oblong, 3′ – 6′ long, the capillary branches widely spreading; spikelets 1″ long, 2 – 5-flowered, long-pedicelled; glumes acute, faintly nerved. — Low ground, in the upper districts. July – August.

+ + *Tall perennials: culms simple.*

9. **E. tenuis,** (Ell.). Culms, including the panicle, 2° – 3° high; leaves 1° – 2° long, bearded at the base; panicles 1° – 2° long, capillary, diffuse, bearded at the lower axils; spikelets pale, long-pedicelled, 2 – 6-flowered; florets oblong-lanceolate, acute; glumes lanceolate, acuminate, strongly 3-nerved. — Dry sandy soil in the upper districts.

10. **E. capillaris,** Nees. Panicle widely expanding, the lower axils mostly bearded; spikelets very small (1″ – 1½″ long), 2 – 4-flowered, mostly purple, on long diverging capillary pedicels; glumes and florets ovate, acute; flowering glume obscurely 3-nerved. — Dry uncultivated fields. August – Sept. — Leaves and sheaths smooth or hairy. Panicle 1° – 2° long.

11. **E. Elliottii,** Watson. Panicle (1½° – 3° long) reclining, the bristle-like or capillary branches erect-spreading, naked in the axils; spikelets linear, flat (3″ – 4″ long), 8 – 12-flowered, the erect-spreading pedicels 1′ – 2′ long; flowering glume acute, 3-nerved, nearly smooth on the keel; leaves and sheaths very smooth and shining. (Poa nitida, *Ell.*) — Low grassy places along the coast, Florida to South Carolina. August – Sept. ♃ — Leaves narrowly linear, longer than the short (6′ – 9′ high) culm.

12. **E. pectinacea,** Gray. Panicle erect, widely spreading, or the numerous rather rigid and often hairy branches at length reflexed; spikelets oblong-linear, purple, flat, about 8 flowered, shorter than the erect or slightly

spreading pedicels; flowering glumes ovate, acute, strongly 3-nerved, rough-keeled. — Dry sterile soil. August – Sept. — Panicle 1° – 1½° long. Leaves and sheaths mostly clothed with long soft hairs.

13. **E. campestris,** Trin. Panicle 1° – 2° long, the long scattered capillary branches spreading, or the lower ones reflexed, the lower axils bearded; spikelets linear, the lateral ones mostly longer than their pedicels, 2″ – 4″ long, 6 – 12-flowered; flowering glumes closely imbricate, acute, 3-nerved; culms clustered; leaves 1° long. — Low pine barrens, common. Oct.

Var. **refracta.** Smooth throughout, or the sheaths of the short and rigid leaves bearded at the throat; panicle (6′ – 12′ long) with the branches reflexed; spikelets sessile or nearly so, 15 – 20-flowered; flowering glume faintly 3-nerved. — Dry soil, Middle Florida.

66. UNIOLA, L.

Tough perennial grasses, with erect culms, from creeping rootstocks, and mostly broad, flat, many-flowered spikelets, in erect or drooping panicles, with one or more of the lower flowers glume-like and neutral, and the upper imperfect. Glumes lanceolate, compressed-keeled. Flowering glume rather rigid, strongly keeled, nerved, awnless, larger than the 2-keeled palea. Grain free. Stamens 1 – 3.

* *Spikelets long-pedicelled, drooping: glumes appressed.*

1. **U. latifolia,** Michx. Culms 2° – 3° high; leaves flat, lanceolate (½′ – 1′ wide); panicle loose, drooping; spikelets green, oblong, acute, 10 – 15-flowered; flowering glume one third longer than the palea, fringed on the keel, acutish; stamen 1. — Banks of rivers in the upper districts. July – August. — Spikelets 12″ – 15″ long.

2. **U. paniculata,** L. Culms stout, 3° – 5° high; leaves very long, rigid, soon convolute; panicle crowded, drooping; spikelets whitish, oblong-ovate, about 12-flowered; flowering glume serrulate on the keel; stamens 3. — Drifting sands along the coast. July – August. — Plant pale. Leaves 2° – 4° long.

* * *Spikelets sessile or nearly so, erect: glumes at length spreading.*

3. **U. gracilis,** Michx. Panicle long and slender, the branches appressed; spikelets small (2″ – 3″ long), wedge-shaped, 4 – 6-flowered; flowering glume longer than the palea, smooth on the keel, obtuse; stamen 1. — Rich damp soil. July – August. — Culms slender, mostly erect, 2° – 4° long. Leaves 2″ – 3″ wide. Sheaths smooth.

4. **U. longifolia,** Scribn. Culm stouter; leaves broader (4″ – 8″ wide), the sheaths pubescent; panicle more rigid; spikelets larger; otherwise like the preceding. — Low ground, Florida to Tennessee. July – Sept.

5. **U. nitida,** Baldw. Panicle short, of few rigid spreading branches; spikelets (6″ – 8″ long) oblong, 6 – 8-flowered; flowering glume as long as the palea, acute, serrulate near the apex; stamen 1. — Swamps, Florida, Georgia, and westward. August. — Culms slender, 1° – 2° high. Leaves linear, smooth.

67. PHRAGMITES, Trin. Reed.

Large perennial marsh grasses, with broad flat leaves, and a large terminal diffuse panicle. Spikelets 3 – 6-flowered, with the rachis bearded with long silky hairs. Lowest floret with a single stamen and imperfect ovary, naked; the others triandrous and perfect, villous at the base. Glumes unequal, pointed. Flowering glume narrowly awl-shaped, 2 – 3 times as long as the 2-cleft palea. Stigmas 2. Grain free.

1. **P. communis,** Trin. Culms 5° – 8° high; leaves numerous, 1′ – 2′ wide; panicle diffuse, nodding; spikelets 3 – 5-flowered, about as long as the white hairs of the rachis. — Deep river marshes near the coast. Sept.

68. DISTICHLIS, Raf. Spike Grass.

A low and rigid perennial diœcious grass, growing in saline marshes, with linear-subulate involute distichous leaves, and many-flowered compressed spikelets, crowded in a nearly simple spike. Glumes smooth, somewhat coriaceous, obtuse, compressed, not keeled; the flowering ones many-nerved. Stamens 3. Stigmas 2. Grain oblong, free.

1. **D. maritima,** Raf. Rootstocks long and creeping; culms 1° high; leaves spreading, rigid, 2′ – 4′ long, smooth, like the imbricated sheaths; spikelets oblong, 7 – 15-flowered. — Low sandy shores and marshes. August – Sept.

69. MONANTHOCHLOË, Engelm.

A low maritime perennial grass, with very short and rigid crowded leaves, and diœcious flowers. Spikelets terminal, sessile, 3 – 5-flowered. Empty glumes like the leaves, the flowering ones membranaceous, enclosing the palet and stamens or pistils, the uppermost flower abortive. Stamens 3. Styles 2, shorter than the plumose stigmas. Grain free.

1. **M. littoralis,** Engelm. — Low sandy shores, South Florida. — Culms much branched, 5′ – 8′ high, smooth and rigid, erect, or at length prostrate and rooting; leaves 3″ long, obtuse, many-nerved, mostly crowded at the summit of the short branches, and enclosing the short (3″ – 4″) sessile spikes.

70. LOLIUM, L. Darnel.

Spikelets many-flowered, sessile, compressed, the edge applied to the continuous rachis. Glumes 2 in the terminal spikelet, in the others only one, and bract-like. Flowering glumes rigid, concave, awned below the apex. Stamens 3. Grain adherent.

1. **L. temulentum,** L. Culm stout (2° high); rachis (1° long) flexuous; glume rigid, many-nerved, longer than the 5-flowered spikelet; flowering glume awned under the scarious obtuse apex. — Grain fields, North Carolina. Introduced. ①.

2. **L. perenne,** L. Culms slender (½° – 1½°); rachis (6′ – 8′ long) straight; glume rigid, many-nerved, shorter than the 8 – 10-flowered spikelet; flowering glume awnless or short-awned at the scarious emarginate apex. — Waste ground. Introduced. July. ①.

71. AGROPYRUM, Beauv. COUCH GRASS.

Spikelets 3 – many-flowered, compressed, the side applied to the rachis. Glumes 2, in all the spikelets. Otherwise like the preceding.

1. **A. repens,** Beauv. Culms erect from creeping rootstocks; spikes erect, spikelets 4 – 8-flowered; awns short and straight, or none. — Cultivated fields. Introduced.

2. **A. caninum,** R. & S. Rootstocks none; spikes nodding; spikelets 3 – 5-flowered; awns spreading, twice as long as the florets. — Sparingly introduced.

72. HORDEUM, L. BARLEY.

Spikelets 3 at each joint of the terminal spike, the lateral ones imperfect, the middle one 1-flowered, with a rudiment at the base of the palet. Glumes 2 before each spikelet, unequal, awned. Flowering glume awned. Stamens 3. Grain adhering to the palet.

1. **H. pratense,** Huds. Annual, 6′ – 18′ high; upper sheath dilated; lateral spikelets short-pedicelled, awnless, the middle one long-awned. — Roadsides and waste ground. Introduced.

73. ELYMUS, L. LYME GRASS.

Coarse flat-leaved perennial grasses, with rigid erect culms, bearing a single spike of 2 – 7-flowered spikelets, arranged 2 – 4 in a cluster at each joint of the flexuous rachis. Glumes 2, placed side by side before the spikelets, coriaceous, unequal-sided, mostly awned. Florets of the same texture as the glumes, the glume convex on the back, tapering into a rigid awn, the palet enclosing the linear hairy-tipped grain. Stamens 3. Stigmas 2.

1. **E. Virginicus,** L. Spike dense, erect (3′ long), the base usually included in the dilated sheath of the uppermost leaf; spikelets 2 – 3 in a cluster, 2 – 3-flowered, smoothish, short-awned; glumes lanceolate, strongly nerved. — River banks. July – August. — Culms 2° – 3° high. Leaves rough. Sheaths smooth.

2. **E. striatus,** Willd. Spike dense, erect or slightly nodding (3′ – 5′ long), long-peduncled; spikelets 2 – 3 in a cluster, 1 – 3-flowered, hairy, long-awned; glumes linear-subulate, long-awned, much longer than the flowers. — Rocky woods and banks in the upper districts. July – Sept. — Culms slender, 2° high. Leaves and sheaths smooth or pubescent.

3. **E. Canadensis,** L. Spike long (6′ or more), erect or nodding, exserted; spikelets in pairs, 5 – 6-flowered; glumes and paleæ more or less rough-hairy, long-awned. — River banks, mountains of Georgia and Tennessee. — Culms 3° – 4° high. Leaves broadly linear.

74. ASPRELLA, Willd. BOTTLE-BRUSH.

Spikelets 2 – 3 on each joint of the rachis, raised on a short and thick stalk Glumes none, or a single awn-like rudiment. Otherwise as in Elymus

1. **A. Hystrix,** Willd. Spike erect, 3′–6′ long, lax-flowered; spikelets yellowish, 3–4-flowered, smooth or rough-hairy, long-awned; leaves and sheaths smoothish. — Dry woods in the upper districts. July. — Culms 2°–3° high. Rachis 2-edged.

75. ARUNDINARIA, Michx. CANE. REED.

Tall woody grasses, with clustered spreading branches, broad and flat persistent leaves, and racemose or panicled many-flowered spikelets. Glumes unequal, concave, membranaceous, acuminate or awn-pointed. Florets rather loosely imbricated on the bearded and jointed rachis; the glume ovate-lanceolate, concave, many-nerved, awn-pointed, the palet strongly 2-keeled. Stamens 3. Stigmas 3. Grain oblong, free.

1. **A. macrosperma,** Michx. (CANE.) Culms arborescent, 10°–20° high, rigid, simple the first year, branching the second, afterwards at indefinite periods fruiting, and soon after decaying; leaves lanceolate (1′–2′ wide), acuminate, smoothish; panicles lateral, composed of few simple racemes; spikelets purple, erect; flowering glume lanceolate-ovate, pubescent, fringed (8″ long), awn-pointed. — Banks of the larger rivers, Florida to North Carolina. Feb.

2. **A. tecta,** Muhl. (REED.) Culms slender, 2°–10° high, branching; leaves linear-lanceolate, acuminate, roughish, the sheaths bearded at the throat; spikelets solitary, or in a simple raceme at the summit of the branches, or frequently on leafless radical culms; flowering glume (6″ long) ovate-lanceolate, smooth, fringed on the margins. — Swamps, Florida to North Carolina. Feb.–March.

SERIES II.

CRYPTOGAMOUS OR FLOWERLESS PLANTS.

VEGETABLES destitute of proper flowers, and producing, in the place of seeds, minute homogenous bodies (spores) containing no embryo.

CLASS III. ACROGENS.

Plants with a distinct stem, growing from the apex only, containing woody fibre and vessels.

ORDER 163. EQUISETACEÆ. (HORSETAIL FAMILY.)

Comprises only the genus

1. EQUISETUM, L. SCOURING RUSH.

Fructification terminal, spiked or cone-like. Spore-cases (*sporangia*) 6 – 7, borne on the lower surface of the peltate scales, 1-celled, opening on the inner side. Spores loose, furnished at the base with 4 club-shaped elastic filaments (*elaters*). — Stems leafless, grooved, hollow and jointed, bearing at the closed joints a toothed sheath.

1. **E. lævigatum,** Braun. Stems perennial, mostly simple, the obtuse ridges smooth, or roughened with minute tubercles; sheaths appressed, with numerous bristle-like caducous black teeth. — Stiff clay soil, North Carolina, and northward. — Stem 1½° – 4° high.

2. **E. robustum,** Braun. Stem tall (2° – 4° high), stout, simple; the ridges roughened by a single row of tubercles; sheaths short, appressed, with a black girdle above the base, and about forty 3-keeled ovate-subulate deciduous teeth. — Banks of the Chattahoochee River, Georgia, and westward.

3. **E. hiemale,** L. Stems 2° – 3° high, simple, 20 – 30-furrowed, the ridges studded with silicious papillæ; sheaths short-cylindrical, girdled with black, the membranaceous teeth deciduous. — Wet banks, Georgia, and northward.

ORDER 164. FILICES. (FERNS.)

Leafy plants, mostly with perennial rootstocks (*caudex*), which in this climate are creeping and slender, or stouter and sometimes ascending, but in the tropics often grow many feet high, with a diameter of several inches, giving the plants an arborescent appearance (*tree-ferns*). Leaves (*fronds*) circinately rolled up in vernation, and raised on a stalk or petiole (*stipe*). Spore-cases (*sporangia*), one-celled, borne on the under side of the fronds or along their margins, often covered by a membrane of various shape (*indusium* or *involucre*), containing numerous exceedingly minute spores.

Synopsis.

SUBORDER I. POLYPODINEÆ. Sporangia collected in dots, lines, or variously shaped clusters (*sori* or *fruit-dots*), or in indefinite masses, cellular-reticulated, mostly pedicelled; the stalk running into a vertical incomplete elastic ring, the straightening of which ruptures the ripe sporangium on the inner side, discharging the spores. — Fronds simple or variously divided.

TRIBE I. **ACROSTICHEÆ.** Sporangia collected in large or indefinite masses on the back of the frond: indusium none.

1. ACROSTICHUM. Sporangia covering the lower surface of the upper pinnæ. Veins reticulated.

TRIBE II. **POLYPODIEÆ.** Fruit-dots roundish, distinct, destitute of indusium, borne on the back of the frond.

2. POLYPODIUM. Fruit-dots scattered variously on the back of the frond, borne at or near the ends of the veins.

TRIBE III. **GRAMMITIDEÆ.** Fruit-dots usually linear, dorsal, variously arising from the veins. Indusium none.

3. TÆNITIS. Fruit-dots linear, central or submarginal.

TRIBE IV. **VITTARIEÆ.** Sporangia borne in a continuous elongated marginal or sub-marginal furrow.

4. VITTARIA. Fronds simple, narrowly linear.

TRIBE V. **PTERIDEÆ.** Fruit-dots marginal, separate or continuous. Indusium formed by the reflexed margin of the frond or its lobes, opening toward the midrib.

* Indusium thin and membranaceous, continuous around the margin of the fertile pinnæ.

5. PTERIS. Sporangia borne on a transverse intramarginal veinlet.
6. PELLÆA. Sporangia borne on the ends of the veins, at length confluent.

* * Indusium rarely continuous, mostly formed of the reflexed ends of the lobes or divisions of the pinnæ or pinnules.

7. CHEILANTHES. Sporangia borne on the veins beneath the reflexed margin of the frond. Pinnules with a midrib.
8. ADIANTUM. Sporangia borne on the under side of the indusium. Midrib none or eccentric.
9. CERATOPTERIS. Fruit-dots on the upper part of the veins, distinct, or forming a marginal band of sporangia.

TRIBE VI. **BLECHNEÆ.** Fruit-dots dorsal, linear or oblong, borne on transverse veins parallel to the midrib. Indusium fixed by its outer margin, and opening at the inner one.

10. **BLECHNUM.** Fruit-dots linear, elongated, covered by a continuous indusium.
11. **WOODWARDIA.** Fruit-dots linear-oblong, in a series near the midrib, covered by separate indusia.

TRIBE VII. **ASPLENIEÆ.** Fruit-dots dorsel, linear or oblong, oblique or at right angles to the midrib. Indusium fixed by one margin to the veinlet, opening at the other.

12. **CAMPTOSORUS.** Fruit-dots straight or curved, scattered irregularly on the more or less reticulated veins, or facing each other in pairs. Frond simple.
13. **ASPLENIUM.** Fruit-dots oblique, on the upper side of the veins, rarely on both sides of them. Veins free.
14. **SCOLOPENDRIUM.** Indusia in pairs, and opening towards each other.

TRIBE VIII. **ASPIDIEÆ.** Fruit-dots at or below the ends of the veins, round, or somewhat oblong and then placed across the vein. Indusium round or nearly so, fixed in the middle and opening at the margin, or reniform and fixed at the sinus.

* Fertile and sterile fronds alike.

15. **CYSTOPTERIS.** Indusium on the back of the veinlet, hood-shaped, fixed at the base partly under the fruit-dot, opening toward the apex of the segment.
16. **ASPIDIUM.** Indusium mostly on the back of the veins, orbicular or round reniform, fixed in the middle or at the sinus, opening all round the margin.
17. **NEPHROLEPIS.** Indusium at the end of a free vein, reniform, fixed at the sinus or by the arcuate base, opening toward the margin of the frond.
18. **PHEGOPTERIS.** Indusium obsolete.

* * Fertile and sterile fronds different.

19. **ONOCLEA.** Fertile fronds contracted, the divisions rolled up and berry-like.

TRIBE IX. **WOODSIEÆ.** Fruit-dots round, borne on the back of a free vein. Indusium fixed beneath the fruit-dot, saucer-shaped, or globose and bursting at the top.

20. **WOODSIA.** Indusium divided into irregular lobes, or a capillary fringe.

TRIBE X. **DICKSONIEÆ.** Fruit-dots marginal, roundish, borne at the ends of the free veins. Indusium cup-shaped or two-valved, its outer part composed of a reflexed lobe of the frond, or more or less united with it.

21. **DICKSONIA.** Indusium (in our species) small, nearly globular, membranaceous.

SUBORDER II. HYMENOPHYLLEÆ. Sporangia borne on a setiform or slender receptacle, cellular-reticulated, surrounded by a complete transverse ring. Involucres marginal, at the ends of the veins, cup-shaped or two-valved. Fronds delicately membranaceous and pellucid.

22. **TRICHOMANES.** Involucre cup-shaped or funnel-shaped, sometimes 2-lipped.

SUBORDER III. SCHIZÆINEÆ. Sporangia large, borne on narrow segments of the frond, oval, cellular-reticulated, crowned by the converging striæ of a complete apical ring, opening longitudinally.

23. **LYGODIUM.** Sporangia attached laterally in two rows to the narrow divisions of the pinnæ, each one covered by a scale-like indusium.
24. **ANEIMIA.** Sporangia attached by their bases to the narrow divisions of the panicled fertile branches of the frond. Indusium none.

SUBORDER IV. OSMUNDINEÆ. Sporangia large, nearly sessile on the back or margins of the mostly contracted fertile fronds, two-valved, opening vertically at the apex. Ring rudimentary or none.

25. OSMUNDA. Sporangia globular, covering the contracted fronds or portions of fronds.

1. ACROSTICHUM, L.

Sporangia entirely covering the lower surface of the upper pinnæ. Veins finely reticulated with oblong hexagonal meshes. — Tall Ferns, with pinnate fronds.

1. **A. aureum,** L. Fronds coriaceous; pinnæ short-stalked, lanceolate-oblong, entire. — Coast of South Florida. — Fronds 4° - 8° high, dark green, shining.

2. POLYPODIUM, L. POLYPODY.

Fruit-dots round, naked, mostly at the ends of the free or reticulated veins. — Rootstocks creeping. Sterile and fertile fronds alike.

§ 1. PODYPODIUM proper. — *Veins free.*

1. **P. vulgare,** L. Fronds evergreen, smooth on both sides, oblong, simply and deeply pinnatifid; the divisions linear-oblong, obtuse, slightly toothed; fruit-dots large. — Mossy rocks, etc. in shady woods in the upper districts of Alabama, and northward. — Fronds 4′ - 10′ high.

2. **P. Plumula,** Willd. Fronds linear-lanceolate, narrowed at both ends, pinnatifid to the black and somewhat chaffy midrib; the divisions very numerous, narrowly linear, entire, wider at the base; fruit-dots small. — Tampa Bay (*Dr. Leavenworth*). — Fronds 12′ - 18′ high, 18″ - 24″ wide.

3. **P. pectinatum,** L. Stipe erect from a stout rootstock, smoothish (2′ - 6′ long); frond 1° - 2° long, broadly lanceolate, attenuate at each end, deeply pinnatifid; pinnæ very numerous, alternate, linear-lanceolate, obtuse, mostly entire; sori in two rows. — On trees, East Florida (*Miss Reynolds, Garber*).

§ 2. MARGINARIA, Bory. — *Veins obscure, sometimes reticulating near the margin. Stipe and lower surface of the frond covered with chaffy scales.*

4. **P. incanum,** Swartz. Fronds evergreen, coriaceous, beneath thickly beset with peltate chaffy scales, smooth and green above, pinnately parted; the divisions oblong, obtuse, entire; fruit-dots near the margin. — On trunks of trees in the lower districts. — Rootstock chaffy, creeping. Fronds 3′ - 8′ high.

§ 3. CAMPYLONEURUM, Presl. — *Veins parallel, pinnate from the midrib: veinlets reticulated, forming a series of parallel angular arcs with short veinlets proceeding from their angles. Fronds simple.*

5. **P. Phyllitidis,** L. Fronds linear-lanceolate, entire, acuminate, of a thin chartaceous texture, semi-pellucid; fruit-dots rather large, in two rows between the veins. — South Florida. — Fronds 1° - 2° high.

§ 4. Phlebodium, R. Br. — *Veins pinnate from the midrib, furcate: veinlets reticulated in mostly elongated meshes. Fruit-dots large, commonly at the extremities of two converging veinlets.*

6. **P. aureum,** L. Fronds smooth and glaucous, broadly ovate, pinnately parted; the divisions lanceolate, acuminate, entire; fruit-dots mostly in a double series in each lobe of the frond, near the midrib. — South Florida. — Rootstock large, creeping, copiously beset with lanceolate brown chaffy scales. Stipe smooth, 8′ – 10′ long. Fronds 10′ – 15′ long, two thirds as wide.

§ 5. Phymatodes. — *Areolæ fine, irregular, the free veinlets spreading in various directions.*

7. **P. Swartzii,** Baker. Rootstock very slender, long and climbing; fronds single, or 2 – 3 together, 4′ or 5′ long, lanceolate, mostly obtuse, narrowed at base into the short stipe, the margins wavy, entire; sori in a single row on the free veinlets. (P. serpens, *Swartz.*) — Key Largo, South Florida (*Curtiss*), climbing on low bushes.

3. TÆNITIS, Swartz.

Sori linear, continuous or interrupted, central or intramarginal. — Veins reticulate.

1. **T. lanceolata,** R. Br. Rootstock thick, creeping; frond 6′ – 12′ long, lanceolate, entire, narrowed at base into the short smooth stipe; sori intramarginal along the upper part of the frond. — On trees, Rhoda Key, South Florida (*Curtiss*).

4. VITTARIA, Smith.

Sporangia on a continuous receptacle immersed in a furrow open outwardly at or near the margin of the frond. Veins obscure, simple, connected at their extremities by the receptacle. Fronds simple, linear, elongated.

1. **V. lineata,** Swartz. Fronds nearly sessile, narrowly linear, elongated; midrib inconspicuous, lines of fructification near the margin. (V. angustifrons, *Michx.*) — On trees, South Florida. — Fronds many from the short scaly rootstock, 1° – 2° long.

5. PTERIS, L.

Sporangia borne on a transverse marginal receptacle connecting the ends of the veins. Indusium continuous, formed of the membranaceous margin of the frond, at first reflexed, at length pushed back and disclosing the ripened fructification. Fronds 1 – 3-pinnate or decompound.

1. **P. longifolia,** L. Fronds lanceolate, pinnate; pinnæ numerous, narrowly linear, acuminate, obtuse at the base, the terminal one elongated, the lower ones gradually smaller. — Key West. — Fronds 1° – 2° high, smooth. Stipe more or less chaffy.

2. **P. Cretica,** L. Fronds smooth, ovate, ternate or pinnate; the lower pinnæ 2 – 3-parted, sessile, the upper ones decurrent; sterile ones lanceolate, or linear-lanceolate, finely serrate; fertile ones narrower, entire, or spinulose-serrate at the acuminate apex; veins straight, simple or forked, close together, almost at right angles to the midrib. — Shady woods, Middle and East Florida. — Fronds 6′ – 10′ long. Stipe smooth, very long and slender.

3. **P. serrulata,** L. f. Frond bipinnatifid; pinnæ 12 or more, in opposite pairs, decurrent, the lower linear, pinnatifid; otherwise nearly as the last. — South Carolina and Alabama.

3. **P. aquilina,** L. (BRAKE.) Fronds large, glabrous or somewhat hairy beneath, broadly triangular, tripinnate; pinnules oblong or linear, entire or hastate or pinnately parted; ultimate segments obtuse, oblong or linear, the terminal ones often elongated, the margin reflexed or revolute; veins simple or forked; indusium narrow, ciliated. — Common everywhere. — Stipe stout, 6′ – 2° high. Frond 1° – 2° long.

Var. **caudata** (P. caudata, *L.*), with very narrow segments, the terminal ones elongated, and both surfaces of the frond glabrous or even glaucous, occurs in South Florida and along the Gulf coast.

6. PELLÆA, Link.

Fruit-dots oblong or linear at the ends of the veins, confluent in a broad marginal line of fructification. Indusium as in Pteris. Veins free, forked or pinnate. Fronds mostly 1 – 3-pinnate, smooth, mostly coriaceous.

1. **P. atropurpurea,** Link. Fronds tufted, coriaceous, ovate-lanceolate, pinnate or below bipinnate; pinnæ opposite, rather distant, the lower ones stalked; pinnules sessile, oblong or linear-oblong, truncate or subcordate at the base, obtuse or rarely somewhat mucronate; indusium formed of the reflexed and little changed margin, at length pushed back and showing a broad marginal band of ripened sporangia. — Mountains of Alabama, and northward, mostly on lime-rock. Frond 2′ – 12′ high. Stipe and rachis black and shining, smooth or somewhat rusty-pubescent.

7. CHEILANTHES, Swartz.

Fruit-dots at the thickened ends of the veins, distinct or at length confluent, covered by the continuous or interrupted reflexed margin of the lobes. Veins free. Fronds 1 – 3-pinnate; pinnules with a midrib, often hairy or woolly.

1. **C. Alabamensis,** Kunze. Fronds broadly lanceolate, subcoriaceous, pinnate; pinnæ ovate-lanceolate, deeply pinnatifid, or the lower ones again pinnate; pinnules ovate-oblong, rather obtuse, often auriculate at the upper side of the base, glabrous, the margin reflexed and forming a mostly continuous membranaceous involucre. — Limestone cliffs on the Tennessee and French Broad Rivers, Alabama, etc., *Buckley*. — Fronds 4′ – 6′ long, on slender black and polished stipes 2′ – 4′ long, pulverulent along the upper side, and somewhat chaffy at the base.

2. **C. vestita,** Swartz. Fronds broadly lanceolate, like the stalks hirsute with rusty hairs, bipinnate; pinnæ triangular-ovate; pinnules oblong, obtuse, more or less incised; the ends of the lobes reflexed to form separate herbaceous involucres. — Near Augusta, Georgia (*Kunze*), and northward. — Fronds 4′ – 8′ long, becoming smooth above.

3. **C. tomentosa,** Link. Fronds broadly lanceolate, tripinnate, above clothed with white deciduous hairs, beneath densely tomentose with brownish white wool; primary pinnæ ovate-oblong; ultimate segments minute, round-

obovate, sessile or adnate-decurrent, the margin reflexed forming a continuous somewhat membranaceous involucre. — French Broad River, North Carolina and Tennessee, and southwestward. — Frond 6′-12′ long. Stipe and rachis whitish with long paleaceous hairs.

4. **C. microphylla,** Swartz. Stipe dark brown, from a short rootstock, smoothish; frond smooth, broadly lanceolate, 2-3 pinnatifid, 3′-9′ long; pinnæ lanceolate from a broader base; pinnules linear-oblong, obtuse, entire, or the lower ones pinnatifid; involucre pale, narrow. — Islands near the mouth of the St. John's (*Curtiss*). — Frond 1° or less long.

8. ADIANTUM, L. MAIDENHAIR.

Indusium orbicular or transversely elongated, formed of a reflexed and altered portion of the margin of the frond, bearing the sporangia on its under side at the ends of the veins. Midrib none or eccentric: veins forking, mostly free. Stipe and rachis commonly black and shining.

1. **A. pedatum,** L. Stipe long and slender, forked, the spreading and recurved branches bearing on the outer side several slender horizontal pinnate divisions; pinnules numerous, alternate, short-stalked, oblong, entire on the lower side, the upper margin cleft and fruit-bearing. — Shady woods, North Carolina, and northward. — Stipe 8′-12′ high. The most graceful of all our Ferns.

2. **A. tenerum,** Swartz. Frond deltoid, 3-4-pinnate; pinnules stalked, obliquely rhombic, deciduous, the wedge-shaped base and lower edge entire, the upper edge broadly and shortly lobed, bearing the transverse sori at their tips. — East Florida (*Feay, etc.*). — Fern 1°-3° high, the black stipe and rachis smooth and glossy.

3. **A. Capillus-Veneris,** L. Frond ovate-lanceolate, 2-3-pinnate; pinnules very delicate, oblique, broadly wedge-shaped or sometimes rhomboid, rather long-stalked, the upper margin deeply incised and fruit-bearing or sterile and dentate; stipe slender, ebeneous; rachis almost capillary, flexuous. — Mostly pendent from limestone cliffs, Florida to North Carolina, and westward. — Fronds 1°-3° long.

9. CERATOPTERIS, Brongn.

Sori on 2 or 3 veins which are parallel with the midrib and margins of the frond, the fruit-dots sessile, roundish, the involucre formed by the inflexed margins of the frond which meet at the midrib.

1. **C. thalictroides,** Brongn. Floating; stipes thick, with large air-cells; fronds tender, the sterile ones ovate in outline, broadly 3-lobed or 3-parted, or at length bipinnatifid, the margins wavy or bluntly lobed; the fertile ones 2-3 pinnate, with linear divisions. — Head-waters of the St. John's (*Curtiss*).

10. BLECHNUM, L.

Sporangia on a transverse elongated receptacle parallel to the midrib, combining the veins near their bases. Indusium fixed by its outer margin, opening inward. Veins of the sterile fronds free. Fronds simple or pinnate

1. **B. serrulatum,** Michx. Fronds erect, rigid, pinnate; pinnæ articulated with the rachis; fertile ones linear-lanceolate, acute, finely and sharply serrate; fruit close to the midrib; sterile ones broader, bearing a few chaffy scales along the midrib. — South Florida.

11. WOODWARDIA, Smith.

Fruit-dots linear-oblong, in one or two series on transverse anastomosing veinlets parallel and near to the midrib. Indusium attached by its outer margin to the veinlet, opening inward. Veins more or less reticulated, free toward the margin of the frond. Fronds mostly pinnatifid or pinnate.

1. **W. angustifolia,** Smith. Fronds smooth, pinnatifid; the sterile ones ovate, with broadly lanceolate finely serrate divisions, united at the base and decurrent on the stipe, the veins reticulated in several series of areoles; fertile fronds taller, with narrowly linear entire divisions, and a single series of elongated areoles, each containing an oblong fruit-dot with a vaulted indusium. — Bogs and shady banks. — Rootstock creeping, elongated, as thick as a goose-quill. Stipe 6′–12′ high, about the length of the frond.

2. **W. Virginica,** Willd. Fertile and sterile fronds alike, ovate, smooth, pinnate; pinnæ lanceolate, narrowed at both ends, pinnatifid; segments oblong, obtuse; veins forked, forming a single series of areoles along the midrib both of the pinnæ and of the segments; areoles fruit-bearing in the fertile frond. — Shallow ponds. — Rootstock as thick as one's finger, creeping, elongated, with a tough black exterior, the interior soft and white. Fronds 1°–4° high; stipe smooth.

12. CAMPTOSORUS, Link. WALKING-LEAF.

Fruit-dots linear or oblong, straight or curved, scattered irregularly on the back of the frond, often opposite in pairs, or converging and united. Indusium linear, attached by one margin to the reticulated veins of the simple frond.

1. **C. rhizophyllus,** Link. Fronds evergreen, lanceolate, cordate or hastate at the base, long-acuminate, often rooting at the extremity and giving rise to new plants. (Asplenium rhizophyllum, *L.*) — Shaded rocks on the mountains of Georgia, and northward. — Fronds 4′–10′ long.

13. ASPLENIUM, L. SPLEENWORT.

Fruit-dots oblong or linear, oblique to the midrib, the indusium attached by one margin to the mostly free veins, rarely curved, or double and attached to both sides of the vein.

§ 1. ASPLENIUM proper. — *Indusia straight, attached by their whole length to the upper side of the vein; rarely some of them double, and placed back to back.*

* *Fronds undivided.*

1. **A. serratum,** L. Frond entire, acute, long-tapering at the base, 1°–2° long, the margins wavy and serrate; sori linear, on the lower third of the veins. — Eastern coast of South Florida (*Garber, Curtiss*). — Stipe short and rigid.

* * *Fronds pinnatifid or simply pinnate.*

2. **A. pinnatifidum,** Nutt. Fronds lanceolate, acuminate, cordate at the base, pinnatifid, or below sometimes pinnate, the roundish divisions obtuse, crenate or serrate; fruit-dots scattered. — Alleghanies of Alabama, and northward. — Fronds 3′ - 6′ long. A form with the lowest segment on each side elongated horizontally and acuminate has been found in Alabama by *Mr. Beaumont.*

3. **A. dentatum,** L. Fronds linear-oblong, obtuse, pinnate; pinnæ mostly opposite, 8 - 12 pairs on short but distinct stalks, roundish ovate (3″ - 4″ long), cuneate at the lower side of the base, and truncate at the upper side, crenate or serrate, obtuse; fruit-dots 6 - 8 on each pinna, elongated, the one next the rachis often double. — Carolina (*Th. Moore*), Florida (*Binney*). — Fertile fronds 4′ - 6′ high, the stipe as long as the sterile fronds.

4. **A. Trichomanes,** L. Stipe and rachis slender, purplish black and shining; fronds many from the short rootstock, linear, pinnate; pinnæ numerous, minute (2″ - 3″ long), roundish oblong, narrowed at the base and attached to a raised point on the rachis; fruit-dots 4 - 8 on a pinna. (A. melanocaulon, *Willd.*) — Rocks along the Alleghanies, and northward. — Fronds 4′ - 8′ high.

5. **A. ebeneum,** Aiton. Stipe and rachis purplish black and shining; fronds linear-lanceolate or spatulate, acuminate, pinnate; pinnæ numerous, sessile, linear-oblong, auricled on one or both sides of the base, serrate or nearly entire, those below the middle of the frond gradually shorter and deflexed; fruit-dots 10 - 13 on a pinna. — Florida to Mississippi, and northward. — Fronds 6′ - 18′ high, 1′ - 3′ wide; stipe very short.

6. **A. ebenoides,** R. R. Scott. Frond thin, broadly lanceolate, pinnate below, pinnatifid above, long-attenuate and often rooting at the apex, 4′ - 9′ long; pinnæ lanceolate from a broader base, 3″ - 9″ long. — Shady ravines, Central Alabama, and northward. Rare.

7. **A. parvulum,** Mart. & Galeotti. Frond rigid, lanceolate, pinnate, 2′ - 8′ long; pinnæ nearly opposite and sessile, oblong, entire or crenulate, auricled on one or both sides at the base, 2″ - 6″ long; sori half-way between the margins and midrib. — Calcareous rocks, Florida to Tennessee.

8. **A. firmum,** Kunze. Rootstocks short; frond ovate or oblong, pinnate, rather longer than the pale smooth stipe, 12′ or less long; pinnæ (about 12) lanceolate or oblong, obtuse, serrate, the terminal one attenuate; sori in two rows. — Marion County, Florida (*J. D. Smith*).

9. **A. angustifolium,** Michx. Fronds tall, lanceolate, pinnate; pinnæ numerous; the sterile ones lanceolate from a truncate base; the fertile ones narrower, and bearing 60 - 80 curved fruit-dots on the upper branches of the pinnate forking veins; indusia thickish, strongly convex. — Rich soil along the mountains. — Fronds 1° - 3° high, annual. Pinnæ 2′ - 4′ long, 4″ - 8″ wide.

* * * *Fronds* 2 - 3*-pinnate or pinnatifid.*

10. **A. montanum,** Willd. Fronds small, ovate-lanceolate, pinnate; pinnæ few, petioled, ovate or triangular; the lower ones pinnatifid; the upper

ones incised; divisions toothed or serrate; fruit-dots very short, the basal ones often with a double indusium. — Mountains of Alabama, and northward. — Fronds 2′ - 5′ high, with a winged greenish rachis, and a stipe nearly as long as the frond.

11. **A. Ruta-muraria,** L. Fronds small, ovate, pinnate above, bipinnate below, the divisions stalked, obovate-cuneate, toothed at the apex; veins forked from the base; fruit-dots few, indusia laciniate at the margin. — Rocks along the mountains. — Fronds 2′ - 4′ high.

12. **A. Bradleyi,** Eaton. Frond thin, pinnate below, pinnatifid above, lanceolate-oblong, barely acute, 3′ - 7′ long; pinnæ short-stalked, oblong-ovate, the lowest ones lobed or pinnatifid. — Mountains, Alabama to North Carolina. — Rootstock short. Stipe smooth, black.

13. **A. cicutarium,** Swartz. Tufted from a short rootstock, 3′ - 12′ high, smooth; stipe blackish; frond thin, ovate or oblong, pinnate or nearly bipinnate; pinnæ lanceolate, obtuse; pinnules oblique, entire on the lower edge, toothed on the upper, with the teeth 2 - 3-cleft; sori in two rows. — Sumter County, South Florida.

14. **A. myriophyllum,** Presl. Fronds delicately membranaceous, lanceolate, narrowed below, 2 - 3-pinnate; ultimate segments obovate-oblong, entire or 2 - 3-lobed; veins single in each segment or lobe, bearing below the middle a solitary oblong fruit-dot. — Cavernous limestone rocks, Florida. — Fronds 3′ - 10′ high, with short stipes and narrowly winged rachises.

15. **A. thelypteroides,** Michx. Fronds ample, oblong-ovate, pinnate; the deeply pinnatifid pinnæ lanceolate-acuminate from a broad sessile base; the lower ones smaller, distant, and deflexed; the lobes oblong, obtuse, crenately serrate; fruit-dots 8 - 12 to a lobe, at length confluent, those next the midrib toward the ends of the pinnæ mostly double; indusium convex, thickish. — Rich woods in the upper part of Georgia, and northward. — Fronds 1° - 3° high.

§ 2. ATHYRIUM, Roth. — *Indusium thin, attached to the upper side of the vein; or recurved and crossing the vein, attached to both sides of it, thus becoming reniform or shaped like a horseshoe.*

16. **A. Filix-fœmina,** Bernh. Fronds ample, ovate-oblong; pinnæ lanceolate, numerous; pinnules oblong or lanceolate, doubly serrate or variously incised; fruit-dots short, at length confluent. (Aspidium Filix-fœmina, *Swartz!*) — Low shady woods, Florida to Mississippi, and northward. — Fronds 1° - 3° high. — A. asplenoides (Aspidium asplenoides) is said to differ in having a creeping caudex.

14. SCOLOPENDRIUM, L. HART'S TONGUE.

Sori as in Asplenium, but the involucres arranged in pairs, and opening towards each other.

1. **S. vulgare,** Smith. Stipe smoothish, 2′ - 3′ long from a thick rootstock; frond lanceolate-oblong, acute, slightly serrulate, cordate at the base, 6′ - 9′ long, the upper half fruit-bearing. — Shaded rocks, Tennessee, and northward.

15. CYSTOPTERIS, Bernhardi.

Fruit-dots round, on the back of the free forking veins, covered when young by a thin ovate or roundish hood-shaped indusium attached by the lower side rather beneath the fruit-dot, its apex pointing toward the end of the vein, at length reflexed or falling away. — Delicate Ferns with 2 – 3-pinnate fronds, and short creeping rootstocks.

1. **C. fragilis,** Bernh. Fronds ovate-oblong, bipinnate; the ovate-lanceolate pinnæ mostly opposite, the lowest pair distant, smaller; pinnules oblong or obovate, cuneate at the base and decurrent on the winged secondary rachis, variously toothed or incised; indusium ovate, acuminate. — Moist rocks on the mountains of Georgia, and northward. — Fronds 4′ – 8′ long, on slender brownish stipes as long as the frond. Pinnules varying greatly in shape and size.

2. **C. bulbifera,** Bernh. Fronds lanceolate, very long and attenuated at the apex, often bearing bulblets beneath, bipinnate; pinnæ triangular-lanceolate; the lowest pair largest, distant; pinnules oblong, crenately incised or toothed, obtuse; indusium roundish, truncate. — Rocks on the mountains of Georgia, and northward. — Fronds 1° – 3° long. The bulblets fall to the ground, and form new plants, which are about two years in coming to maturity.

16. ASPIDIUM, Swartz. SHIELD FERN.

Fruit-dots round, borne on the veins mostly below their apices. Indusium round-reniform and fixed at the sinus, or orbicular and fixed by the depressed centre. Veins with acute or attenuated apices. Our species have free veins and 1 – 3-pinnate fronds.

§ 1. LASTREA, Bory. — *Indusium round-kidney-shaped, fixed at the sinus.*

* *Fronds thin and delicate, decaying in autumn: ultimate segments entire or nearly so: veins simple or once forked.*

1. **A. Thelypteris,** Swartz. Fronds smooth, ovate-lanceolate, pinnate; pinnæ lanceolate, often recurved, deeply pinnatifid; the lowest 1 – 2 pairs rather smaller; segments oblong, obtuse, nearly entire, the fertile ones with a strongly revolute margin; veins mostly forked; indusium minute, smooth. — Swamps and bogs, Florida, and northward. — Fronds 10′ – 18′ long, with an elongated stipe. This species and the next one have slender, nearly naked rootstocks, which creep several inches in advance of the fronds.

2. **A. Noveboracense,** Willd. Fronds lanceolate, tapering both ways from the middle, pinnate; pinnæ lanceolate, hairy beneath along the midrib; the lowest 4 – 6 pairs gradually smaller, distant and deflexed; segments oblong, obtuse, nearly entire; veins simple; indusium minute, smooth. — Low grounds, North Carolina, and northward. — Fronds 1° – 2° long, on rather short stipes.

3. **A. patens,** Swartz. Fronds ovate or oblong-ovate, pubescent, especially on the veins beneath, pinnate; pinnæ lance-linear from a broad base, deeply pinnatifid; the lowest pair a little smaller and reflexed; segments oblong, often falcate, entire, or the upper basal one enlarged and pinnatifid:

veins simple, free, or the basal ones meeting at the sinus between the segments; indusium small, pubescent. — Low shady woods, Florida to South Carolina, and westward. — Fronds 1°–3° high.

4. **A. conterminum,** Willd., var. **strigosum,** Eaton. Rootstock thick, erect; stipe short and scaly; frond 1½°–3° high, oblong-lanceolate, attenuate at each end, pinnate; pinnæ very numerous, lanceolate, acuminate, sessile, pinnatifid, the lower ones gradually reduced, the segments obliquely acute, the lowest ones often elongated; sori small, in a single marginal row — Polk County, Florida (*J. D. Smith*).

5. **A. unitum,** var. **glabrum,** Mettenius. Stipe long and slender, from a slender creeping rootstock; frond rather rigid, smooth, ovate-lanceolate, pinnate, 1½°–2° long; pinnæ lanceolate, pinnatifid-lobed, the lobes rounded; lower veins of contiguous lobes united; sori forming a continuous zigzag intramarginal line. — Boggy places, South Florida.

* * *Fronds thicker; ultimate segments more or less serrate or toothed; the lowest veins more than once forked.*

6. **A. spinulosum,** Swartz. Fronds ovate-oblong, thin, smooth; bipinnate or below tripinnate; pinnæ oblong-lanceolate; the lower ones broader, triangular-ovate; ultimate segments oblong, or linear-oblong, closely set on a narrowly winged partial rachis, variously incised or serrate with spinulose teeth; fruit-dots small; indusium deciduous, sparingly glandular at the margin. (A. intermedium, *Muhl.*) — Shady woods in the upper districts. — Fronds 1°–2° long, 5′–9′ wide, varying greatly in outline, and in the shape of the segments.

Var. **dilatatum,** Gray. Fronds wider in outline, of a rather firmer texture; the pinnæ fewer and set farther apart, the lowest pair largest, with the 2–3 lower basal pinnules elongated; segments larger and more distant; fruit-dots larger; indusium smooth. — Summits of the Black Mountains, North Carolina (*Rugel*). — Fronds 1°–2° long, 10′–16′ wide.

7. **A. Goldianum,** Hook. Frond broadly ovate, 2°–4° high; pinnæ oblong-lanceolate, deeply pinnatifid, 6′–9′ long, the segments oblong-linear, slightly falcate, sharply serrulate; fruit-dots small, arranged in a row on each side of the midvein; indusium large with a narrow sinus. — Low woodlands, Tennessee, and northward.

8. **A. Floridanum,** D. C. Eaton. Fronds thickish, broadly lanceolate, pinnate; lower pinnæ sterile, triangular-lanceolate, deeply pinnatifid, with closely set oblong obtuse divisions; upper pinnæ fertile, narrower and longer, again pinnate, with oblong obtuse pinnules, distant on the narrowly winged secondary rachis; fruit-dots large, half-way between the midrib and margin; indusium round-reniform, smooth. (Nephrodium Floridanum, *Hook.*) — Wet woods, Florida to Louisiana. — Fronds 1°–2° high, the sterile ones shorter, growing in a crown from a thick and scaly rootstock.

9. **A. marginale,** Swartz. Fronds evergreen, smooth, thickish and almost coriaceous, ovate-lanceolate, bipinnate; pinnæ lanceolate from a broad base; pinnules oblong or linear-oblong, attached by a broad base to the narrowly winged secondary rachis, entire or crenately toothed; fruit-dots large,

very near the margin; indusium round-reniform, convex, thickish, smooth. — Mountains of Georgia, and northward. — Fronds bluish green, 1° - 2° long, on a short stipe, which, like the short thick rootstock, is shaggy with large brown chaffy scales.

§ 2. POLYSTICHUM, Roth, Schott. — *Indusium orbicular, fixed by the depressed centre.*

10. **A. acrostichoides,** Swartz. Fronds evergreen, thickish smooth and shining, lanceolate, the fertile ones tallest, pinnate; pinnæ numerous, short-stalked, oblong-lanceolate, auriculate at the base on the upper side, cuneate at the lower, obtuse or acute, finely serrate or incised with spinulose-pointed teeth; the upper pinnæ of the fertile frond contracted and covered with the copious fruit-dots; indusium round, peltate, smooth and entire. — Shady and rocky woods. — Fronds 1° - 2° high. Rootstock and stipe very chaffy.

§ 3. EUASPIDIUM, Undw. — *Indusium orbicular, peltate: veins reticulate.*

11. **A. trifoliatum,** Swartz. Frond thin, cordate-ovate in outline, 3-lobed, or 3-foliate, the ovate pinnæ entire or 3-lobed, acuminate, the margins undulate; sori scattered; involucre peltate, orbicular. — Hernando County, Florida (*Curtiss*). — Frond 1° or less long, barely longer than the slender stipe.

17. NEPHROLEPIS, Schott.

Fruit-dots at the ends of the veins, in a series near the margin of the pinnæ. Indusium reniform, often broadly so, fixed by the sinus, or by the arcuate base, open obliquely toward the margin of the pinnæ. Fronds pinnate, elongated; the pinnæ articulated to the rachis. Veins free, forked from the midrib, their apices thickened.

1. **N. exaltata,** Schott. Fronds linear, indefinitely elongated, unfolding numerous pinnæ, which are oblong-lanceolate, auriculate on the upper side of the base, rounded on the lower side, falcate, crenately serrate; fruit-dots large; indusium reniform or crescent-shaped, the oblique sinus narrow and deep or broad and shallow on the same pinnæ. — South Florida. — Fronds 1° - 6° long, 2′ - 3′ wide, usually pendent from the trunks of trees.

18. PHEGOPTERIS, Fée.

Sori small, round, naked, borne on the back of the veins below the apex. Stipe continuous with the rootstock. Veins free.

1. **P. hexagonoptera,** Fée. Fronds annual, broadly triangular, bipinnatifid; pinnæ lanceolate, acuminate, spreading, the lower pair erect; pinnules oblong, mostly obtuse, crenately toothed or entire; fruit-dots numerous, minute. — Shady woods. — A foot or more high from an elongated creeping rootstock. Pinnæ decurrent, forming irregular hexagonal wings on the rachis

2. **P. polypodioides,** Fée. Frond triangular-ovate; pinnæ approximate, hairy, narrowly lanceolate; fruit-dots marginal. (Polypodium Phegopteris, *L.*) — Mountains of North Carolina and Tennessee. — Stipe 6′ - 9′ long Frond 4′ - 6′ broad.

3. **P. tetragona,** D. C. Eaton. Frond erect, pubescent, 2° high, the stipe sharply 4-angled; pinnæ in distant pairs, nearly sessile, lanceolate, acu-

minate, pinnatifid, 3′–4′ long, the segments entire; veins simple. (Polypodium, *L.*) — Rocky woods, East Florida (*Miss Reynolds*).

4. **P. reptans,** D. C. Eaton. Fronds spreading or procumbent, often rooting at the apex, 1°–2° long; pinnæ ½′–1′ long, oblong, obtuse, crenate, truncate at the base, short-petioled, the lower distant; veins branching. (Polypodium, *Swartz.*) — Hernando County, Florida (*J. D. Smith*).

19. ONOCLEA, L.

Fertile fronds contracted, the pinnules strongly revolute and berry-like; fruit-dots on the back of the free veins, with an elevated receptacle; indusium attached partly to the receptacle and partly to the intervenular surface. Sterile fronds foliaceous, much taller than the fertile ones.

1. **O. sensibilis,** L. Sterile fronds on a long smooth stipe, broadly deltoid-ovate, pinnatifid almost or quite to the rachis; the divisions lanceolate, entire or crenately incised; veins finely reticulated with oblong-hexagonal areoles; fertile fronds shorter, bipinnate; pinnæ erect, appressed to the rachis; the pinnules crowded. — Meadows and wet places. — Rootstock nearly naked, creeping. Fronds varying from four inches to three feet in height.

20. WOODSIA, R. Br.

Fruit-dots on the back of the veins; the involucres placed beneath the fruit-dot, saucer-shaped or cup-shaped, divided into irregular lobes or a delicate fringe, or sub-globose and contracted at the mouth. Small Ferns with many fronds from a short scaly rootstock.

* *Involucre fringed, the hair-like divisions incurved on the sporangia.*

1. **W. Ilvensis,** R. Br. Fronds sparingly hairy above, villous beneath and on the stipe and rachis with brown hairs and narrow chaff, lanceolate, pinnate; pinnæ ovate-oblong, deeply pinnatifid, the divisions oblong, obtuse, entire or crenate. Fruit-dots enveloped in the fringe of the involucre. — Rocks along the Alleghany Mountains. — Fronds 3′–8′ high.

* * *Involucre divided into a few irregular lobes.*

2. **W. obtusa,** Torr. Fronds nearly smooth, broadly lanceolate, pinnate, or near the rachis bipinnate; pinnæ triangular-ovate, the lower ones distant, pinnately parted; segments oblong, obtuse, the upper ones toothed, the lower ones pinnatifid with toothed lobes; veins forked, the tips whitish on the upper surface of the frond; fruit-dots on the lobules; involucre delicate, the lobes hidden by the ripened sporangia. — Rocky places, Georgia, and northward. — Fronds 6′–16′ high.

21. DICKSONIA, L'Her. § SITOLOBIUM, Desv.

Fruit-dots small, globular, terminal on the free veins; sporangia on an elevated receptacle in a thin cup-shaped involucre which is partly adherent to a reflexed lobule of the frond. Fronds large, 2–3-pinnate, from a creeping rootstock. — DICKSONIA proper has large two-lipped involucres, of a firmer texture, and several species have an arborescent caudex.

1. **D. punctilobula,** Kunze. Fronds delicate, slightly glandular-pubescent, as is the rachis, lanceolate-acuminate, 2 – 3-pinnate; pinnæ numerous; pinnules oblong-ovate, closely placed, obtuse, pinnately incised or pinnatifid; the divisions obtusely serrate, each one bearing a minute fruit-dot at the upper margin. — Moist shady woods in the upper districts. — Rootstock slender, extensively creeping. Fronds 2° – 3° high, when crushed returning a pleasant odor.

22. TRICHOMANES, L.

Sporangia with a transverse entire ring, arranged on the lower part of a cylindrical, filiform, often elongated receptacle: involucres marginal, funnel-shaped, or bell-shaped, entire or two-lipped at the mouth. Fronds delicate, very thin and pellucid.

1. **T. Petersii,** Gray. Very small, with entangled filiform tomentose rootstocks; fronds oblong-lanceolate or obovate, entire or variously pinnatifid, narrowed into a slender stipe nearly as long as the frond, the younger ones with a few black forked hairs along the margin; veins forked, pinnate from the midrib; involucre solitary, terminal, funnel-shaped, the mouth expanded and slightly two-lipped, receptacle included. — On the face of a sandstone rock, sprinkled from a waterfall, Hancock Co., Alabama (*T. M. Peters*). Also among some Mosses sent from Pensacola, Florida. — Fronds less than an inch high.

2. **T. radicans,** Swartz? Fronds pellucid, with a loose roundish areolation, on a short broadly winged stipe, lanceolate or ovate-lanceolate, bipinnatifid; pinnæ ovate or deltoid-ovate, obtuse, the upper side of the base parallel and appressed to the winged rachis, the lower side cuneate; divisions toothed or divided into linear lobes; involucres terminal on short lobes of the pinnæ tubular-funnel-shaped, margined, at the mouth truncate and slightly two-lipped; receptacle exserted a little or very much. — Mountains, Alabama to East Tennessee. — Rootstock slender, creeping, tomentose with black hairs. Fronds 4′ – 8′ high, 12″ – 18″ wide.

23. LYGODIUM, Swartz. CLIMBING FERN.

Sporangia beneath ovate hood-shaped imbricated indusia, in a double row on narrow divisions of the fronds, attached laterally, ovate, with a many-rayed apical ring. Fronds elongated, climbing, the branches usually in pairs with a short common footstalk.

1. **L. palmatum,** Swartz. Fronds slender, pinnæ deeply cordate at the base, palmately 4 – 7-lobed, the lobes oblong, obtuse, entire; the upper pinnæ decompound and bearing the fruit on the very narrow segments. — Low shady woods, Florida, and northward; not common. — Rootstock very slender, creeping. Fronds 2° – 5° high, climbing on weeds and bushes.

24. ANEIMIA, Swartz.

Sporangia ovate, many-rayed at the apex, attached by the base in a double row to the narrow one-sided paniculate divisions of the two lower branches of the frond, or on separate fronds. Indusium none. Fronds erect, commonly three-branched, the middle branch sterile and 1 – 3-pinnate.

1. **A. adiantifolia,** Swartz. Fronds sparingly pubescent, erect on a slender stipe; the two lower branches elongated, pinnately decompound, fertile; sterile part of the frond deltoid-ovate, 2 – 3-pinnate; ultimate segments obovate, cuneate, entire or lobed, striate above with numerous flabellate veins. — Key West, etc., South Florida. — Fronds 6′ – 12′ high, rather rigid. Rootstock creeping, slender, covered with a black tomentum.

25. OSMUNDA, L. Flowering Fern.

Sporangia globular, short-pedicelled, having an incomplete transverse ring, represented by a few parallel striæ near the apex, opening by a vertical chink into two nearly equal valves, paniculately arranged on contracted parts of the frond or on separate fronds. Fronds tall, erect, several from a stout rootstock, 1 – 2-pinnate. Veins forking, free.

* *Fronds bipinnate, fertile at the top: sterile pinnæ few.*

1. **O. regalis,** L. Fronds ovate, smooth; sterile pinnæ distant; the finely serrulate pinnules distinct, oblong-lanceolate, cordate or truncate at the nearly sessile base, sometimes auricled at the lower side of the base; the upper pinnæ erect, panicled and thickly covered with light brown sporangia. — Swamps, Florida, and northward. — Fronds 1° – 5° high; pinnules 1′ – 2′ long, 3″ – 4″ wide.

* * *Sterile fronds pinnate: the pinnæ numerous, deeply pinnatifid, with oblong entire segments.*

2. **O. Claytoniana,** L. Fronds broadly lanceolate, woolly when young, at length nearly smooth; sterile pinnæ sessile, oblong-lanceolate, deeply pinnatifid; the segments crowded; fertile pinnæ few, between the middle and the base of the frond, contracted, the sporangia deepening in color as the sterile pinnæ expand. (O. interrupta, *Michx.*) — Low grounds in the upper districts, and northward. — Fronds 2° – 3° high.

3. **O. cinnamomea,** L Sterile fronds covered with rusty wool when young, at length smooth; pinnæ sessile, lanceolate; segments broadly oblong, obtuse; the lower basal ones in large fronds often elongated and pinnatifid; fertile frond distinct, contracted, bipinnate, very woolly, densely covered with cinnamon-colored sporangia, withering before the sterile fronds are expanded. — Low grounds, common. — Fronds 1° – 3° high.

Order 165. OPHIOGLOSSACEÆ. (Adder's Tongue Family.)

Sporangia very large, sessile, spiked or panicled, coriaceous, not reticulated, on narrow divisions of the frond, destitute of a ring, transversely two-valved. Fronds not circinate in vernation.

Synopsis.

1. BOTRYCHIUM Sporangia in panicled spikes. Sterile part of the frond pinnately divided.
2. OPHIOGLOSSUM. Sporangia in a simple spike. Sterile part of the frond simple (except No. 4).

1. BOTRYCHIUM, Swartz. MOONWORT.

Fronds mostly solitary, erect from a root of thickened fleshy fibres, the terminal branch fertile, pinnately decompound, bearing on its narrow divisions the large coriaceous, transversely 2-valved sporangia; the lateral branch sterile, with forking free veins.

1. **B. Virginicum,** Swartz. Stem tall; sterile part of the frond sessile, broadly triangular, ternately 3–4-pinnate; ultimate segments oblong-lanceolate, thin and delicate, toothed and incised; fertile part long-stalked, 2–3-pinnate. — Shady woods, Florida, and northward. — Fronds 4′–2° high.

2. **B. ternatum,** Swartz. Stem low; sterile part of the frond mostly long-stalked, broadly triangular, 2–4-pinnate; ultimate segments of a thick and fleshy texture, roundish, ovate, oblong or lanceolate, entire, toothed, incised, or even dissected into very narrow lobes; fertile part taller than the sterile, ovate, 2–3-pinnate. (B. fumarioides, *Willd.* B. obliquum and B. dissectum, *Muhl.*) — Low shady woods and pastures, rarely in open pine barrens, Florida, and northward. — Fronds 3′–10′ high, the succulent stem divided down to the surface of the ground, or even lower.

2. OPHIOGLOSSUM, L. ADDER'S TONGUE.

Fronds mostly solitary, with short and often thickened rootstocks, and fleshy fibrous roots; sporangia large, coriaceous, opening transversely, connate, arranged in compact simple 2-ranked spikes, proceeding variously from the mostly simple sterile part of the frond. Veins reticulated.

1. **O. vulgatum,** L. Sterile part of the frond ovate or oblong-oval, obtuse, sessile near the middle of the stem, without a midrib, 1½′–3′ long; fertile spike terminal, long-peduncled; rootstock short, erect; roots fibrous, spreading horizontally. — In sphagnous meadows and pastures, Tennessee, and northward. — Fronds 4′–10′ high.

2. **O. crotalophoroides,** Walt. Smaller; sterile part of the frond near the base of the stem, ovate, abruptly contracted at the base and slightly petioled; spike short and thick; rootstock bulbous; roots slender. — Low grounds, Florida to Louisiana. — Fronds 3′–6′ high.

3. **O. nudicaule,** L. f. Small, sterile part of the frond near the base of the stem, ovate or oblong, acute, narrowed into a short petiole; spike linear acuminate; rootstock bulbous; roots coarse. — Low sandy places or occasionally in dry soil, Florida and Georgia. — Fronds 1′–4′ high.

4. **O. palmatum,** Plum. Frond thick and succulent, drooping, 4′–10′ long, stipitate from a short woolly rootstock; sterile part cuneate at base, simple, or palmately 2–6-lobed, the lobes tongue-shaped, rarely forking; spikes 1–several at the top of the stipe, or along the basal margins of the sterile part, short-stalked, 1′ long. — In the axils of the leaves of the Palmetto. South Florida.

ORDER 166. LYCOPODIACEÆ. (CLUB MOSS FAMILY.)

Perennial plants, with solid branching and mostly creeping stems, sparingly or thickly clothed with small, simple, sessile, awl-shaped or linear leaves. Fructification consisting of 1–3-celled solitary spore-cases, axillary, either along the main stem, or only in the axils of the upper and mostly changed (bract-like) leaves.

1. LYCOPODIUM, L. CLUB MOSS.

Sporangia of one kind, coriaceous, commonly kidney-shaped, opening transversely into two valves and containing minute powdery spores. Perennial, mostly evergreen plants; the leaves imbricated in several or many rows along the stem and branches.

§ 1. *Sporangia borne along the stem, in the axils of uniform leaves.*

1. **L. lucidulum,** Michx. Stems ascending, forking, somewhat compressed; leaves (deep green) in several rows, linear-lanceolate, very acute, sparingly denticulate, spreading or reflexed. — Shady woods on the mountains of North Carolina, and northward. — Stem 6′–12′ long. Leaves glossy.

2. **L. Selago,** L. Stems short and thick, terete, clustered, erect or ascending, forking; leaves in several rows, deep green, lanceolate, acute, entire, the upper erect, the lower spreading. — High mountains of North Carolina, and northward. — Stems 3′–6′ high, rigid. Leaves crowded.

§ 2. *Sporangia in the axils of the upper leaves, forming a terminal terete bracted spike.*

* *Bracteal and stem leaves alike, spreading.*

3. **L. alopecuroides,** L. Stem thick, terete, forking near the base, recurved, and rooting at the apex, very leafy; leaves in many rows, spreading, subulate, bristly-fringed below the middle; peduncles erect, 6′–12′ high, similar to the stem; spike thick, cylindrical, bristly from the spreading or recurved bracteal leaves. — Open pine barren swamps, Florida to Mississippi, and northward. — Stems 1°–1½° long, pale green.

Var. **adpressum.** Stem 6′–12′ long, creeping; peduncle 4′–6′ high; leaves entire, those of the spike, which is barely thicker than its peduncle, closely appressed. — Damp pine barrens.

Var. **elongatum,** Chapm. Sparingly branched (1½°–2° long); leaves subulate-attenuate, entire, spreading; peduncle slender, erect or leaning (10′–15′ long), the leaves scattered, those of the spike longer, spreading. — Wet or overflowed banks, Apalachicola, Florida.

4. **L. inundatum,** L., var. **pinnatum,** Chapm. Stem rather slender, prostrate, creeping, pinnately branched; leaves linear-subulate, bristly-fringed below the middle, unequal, the upper and lower ones shorter and somewhat appressed, the lateral ones widely spreading; peduncle mostly solitary, erect (1° high), very leafy; spike thick, cylindrical, 2′–3′ long. — Low pine barrens near the coast, West Florida. — Stem 6′–15′ long, and, with the spreading leaves, ½′ wide.

* * *Bracteal leaves wider than those of the stem.*

+ *Leaves of the stem equal and alike.*

5. **L. clavatum,** L. Stem very long, terete, creeping, with numerous short and erect leafy branches; peduncles with scattered leaves, each bearing 2 – 3 linear-cylindrical spikes; leaves in several rows, subulate, entire, incurved, pointed, like the ovate erosely-denticulate bracts, with a spreading bristle. — Mountains of North Carolina, and northward. — Peduncles 4′ – 6′ long.

6. **L. cernuum,** L. Stem forking near the base (6′ – 12′ long), the divisions arcuate-recurved, and rooting at the tip, the short alternate branches forking, and terminated by the short (4″ – 6″) nodding spike; leaves about 6-rowed, linear-subulate, entire, spreading or recurved; those of the spike ovate, acuminate, with bristly margins. — Springy sandy places, Florida and Alabama, near the coast.

+ + *Leaves of the flattened stem and branches unequal.*

7. **L. dendroideum,** Michx. Stem erect (6′ – 12′), clothed with scattered appressed subulate and entire leaves, simple below, bearing above numerous forking and spreading fan-like mostly compressed branches; lower row of leaves, and sometimes the upper, shorter, the lateral ones spreading; peduncles short, bearing one or more cylindrical spikes; bracts spreading, ovate, acute, crenate on the margins. (L. obscurum, *L.*) — High mountains of North Carolina, and northward.

8. **L. Carolinianum,** L. Stem creeping, pinnately branched, naked and rooting beneath; upper leaves short appressed, the lateral ones widely spreading, lanceolate, acute, entire; peduncle slender (6′ – 12′ high), clothed with scattered subulate leaves, and bearing a single linear spike; bracts ovate, acuminate, spreading. — Low pine barrens. — Stem 2′ – 8′ long.

9. **L. complanatum,** L. Stem long and creeping, the numerous erect branches successively forking into many linear crowded flattened branchlets; leaves minute, subulate, imbricated in 4 rows, the lateral ones slightly spreading; peduncles with minute scattered leaves, slender, bearing 2 – 4 erect cylindrical spikes. — Woods along the Alleghanies, and northward. — Stem 2° – 10° long.

2. PSILOTUM, R. Br.

Sporangia of one kind sessile, globular, opening at the apex into 2 – 3 valves, and filled with very minute powdery spores.

1. **P. triquetrum,** Swartz. Stem forking, compressed, the baanches 3-angled; leaves very minute, bristle-like; sporangia spiked, 3-celled, the cells imperfectly 2-valved. — Florida.

ORDER 167. SELAGINELLACEÆ.

Low moss-like terrestrial plants, with branching stems, and scale-like leaves. Sporangia of two kinds, either in the same or in separate axils, one kind as in the preceding order, the other containing few (mostly 3 – 4) larger spores.

1. SELAGINELLA, Beauv.

Characters of the Order.

1. **S. rupestris,** Spring. Stems rigid, densely clustered, erect or spreading, much branched; leaves (grayish) subulate, rigid, rough-fringed on the margins, bristle-pointed, closely imbricated in many rows; spikes linear, nearly sessile. — Dry sand ridges in the pine barrens, and on dry rocks, Florida, and northward. — Stems 2′ – 3′ high.

2. **S. apus,** Spring. Stems prostrate, creeping, slender, branched; leaves scattered, unequal, the lateral ones larger and widely spreading, 2-ranked, ovate, acute or obtuse, membranaceous, denticulate on the margins; the others smaller, acuminate, and appressed; bracts of the short sessile spike similar to the leaves. — Low shady woods, Florida, and northward. — Plant whitish. Stems 3′ – 9′ long.

ORDER 168. MARSILIACEÆ.

Perennial marsh plants, from slender creeping rootstocks, and filiform, or 4-parted petioled leaves. Spores of two kinds, contained in a 2-valved transversely many-celled receptacle (*sporocarp*), which rises from the rootstock or base of the petioles.

1. MARSILIA, L.

Plants with filiform creeping stems, a whorl of 4 wedge-shaped leaves at the summit of a long erect petiole, and one or more globular sporocarps borne on a slender stalk at the base of the petioles, each divided into several partitions, which contain the larger and smaller spores.

1. **M. uncinata,** A. Braun. Leaves smooth or hairy; sporocarps oval, compressed, half as long as the peduncle. — Banks of the Mississippi below Vicksburg.

ORDER 169. ISOETACEÆ.

Mostly aquatic or marsh plants, with filiform clustered leaves arising from a depressed 2-lobed trunk. Sporangia sunk in an excavation of the dilated base of the leaves, either open, or covered by a fold of the leaf (*velum*), filled with minute spores, the central leaves bearing larger spores.

1. ISOETES, L.

Characters of the Order.

1. **I. flaccida,** Shuttlw. Immersed; leaves very long (1½° – 2°), slender, flaccid, yellowish green; spores very small, minutely pulverulent, not reticulated. — In lakes and clear streams, Middle and West Florida.

2. **I. melanospora,** Engelm. Small, mostly monœcious; leaves few (5 – 10), distichous (2′ – 2½′ long); spore cases covered by the thin edges of the cavity (*velum*); larger spores blackish, very minutely warty, the smaller

es dull, papillose. (*Engelmann.*) — In shallow depressions on the summit of Stone Mountain, Georgia (*Engelmann, etc.*).

3. **I. Engelmanni,** A. Braun, var. **Georgiana,** Engelm. Leaves 10′–12′ long, rather slender, stomatose; spore-cases oval, with narrow velum; larger spores and smaller spores smooth. — Slow-flowing water in Horseleg Creek, mountains of Georgia.

4. **I. Butleri,** Engelm. Diœcious; trunk nearly globose; leaves 8–12, bright green, 3′–7′ long; spore-cases usually oblong, spotted, the velum very narrow, or none; ligule subulate, from a triangular base; larger spores warty, smaller spores dark brown, papillose. (*Engelmann.*) — Barrens of Tennessee (*Dr. Gattinger*), and westward.

ORDER 170. SALVINIACEÆ.

Small floating branching plants, with two kinds of sporangia enclosed in thin sporocarps, and attached to a central receptacle, one kind containing a single large spore, the other numerous smaller ones.

1. AZOLLA, Lam.

Stems floating free, pinnately branched. Leaves distichous, imbricated, 2-lobed. Sporocarps in pairs on the under side of the stem, unequal.

1. **A. Caroliniana,** Willd. — On still water, chiefly near the coast, Florida, and northward. — Plant reddish, circular in outline, ½′–1′ in diameter. Leaves ovate, obtuse, rounded and roughened on the back.

ADDITIONS AND CORRECTIONS.

Page 238.

Pluchea Chapmanii, Simpson, is peculiar in bearing the large clustered heads of P. bifrons, but with the ovate petioled leaves of the other species, and may, possibly, prove to be a hybrid form, as Dr. Watson suggested.

Page 302. After Utricularia subulata insert: —

12. **U. resupinata,** D. B. Greene. Flowers solitary, sessile at the summit of the filiform scape, violet-purple; lips entire, the upper spatulate, the lower broader; spur remote, oblong-conical, obtuse, shorter than the corolla; leaves filiform. — Margins of ponds, Calhoun County, West Florida. May. — Scape 4′ – 8′ high. Corolla 4″ – 5″ long.

Page 402. In place of Telanthera polygonoides insert: —

1. **T. ficoidea,** Moquin. Glabrous; sparingly branching, suffrutescent and rooting at the base; leaves lanceolate, the upper sessile; heads axillary and terminal, sessile or short-peduncled, loosely few-flowered; sepals equal, thin, white, barely acute, glabrous; sterile filaments as long as the fertile. — Coast of Florida. July – Sept. — Stem thick, 1° – 3° long. Leaves 2′ – 3′ long.

Page 525. After Commelyna Virginica insert: —

C. elegans, HBK. Puberulous; stems erect, or procumbent and rooting, branching; leaves ovate-lanceolate, contracted and ciliate at the base; spathes mostly single, top-shaped, hooded; sterile peduncle obsolete; petals mostly white; seed smooth. — South Florida (*Garber*). July – Sept. — Stem 1° – 3° long. Leaves 2′ – 3′ long.

INDEX.

Page
Abies, 457
ABIETINEÆ, 455
Abildgaardia, 551
Abutilon, 48
Acacia, 127
Acalypha, 428
ACANTHACEÆ, 363
Acanthus Family, 363
Acer, 87
Acerates, 347
ACERINEÆ, 85
Achillea, 264
ACHYRANTHEÆ, 398
Acnida, 401
Acontium, 9
Acorus, 466
Acrogens, 621
ACROSTICHEÆ, 622
Acrostichum, 624
Actæa, 10
Actinomeris, 255
Actinospermum, 260
Adder's Mouth, 479
Adder's Tongue, 636
Adder's Tongue Family, 636
Adiantum, 627
Adlumia, 21
Adonis, 8
Æschynomene, 108
Æsculus, 86
Agave, 495
Ageratum, 209
Agrimonia, 133
Agropyrum, 619
Agrostemma, 41
AGROSTIDEÆ, 575
Agrostis, 598
Aira, 604
Air Plant, 497
AJUGEÆ, 373
Alchemilla, 134
Alder, 452
Aletris, 497
Alisma, 472
ALISMACEÆ, 472
ALISMEÆ, 472
Allium, 509
Allspice, 154

Page
Almond, 141
Alnus, 452
Alopecurus, 597
Alsine, 42
ALSINEÆ, 39
Alternanthera, 402
Althæa, 52
Alum-root, 143
Alyssum, 30
AMARANTACEÆ, 398
Amaranth, 399
Amaranth Family, 398
Amarantus, 399
AMARYLLIDACEÆ, 492
Amaryllis Family, 492
Amblogyna, 400
Ambrosia, 244
Amelanchier, 141
American Centaury, 336
Amianthium, 517
Ammannia, 157
Amorpha, 102
Ampelopsis, 75
Amphiachyris, 237
Amphianthus, 314
Amphicarpæa, 117
Amphicarpum, 580
Amsonia, 342
AMYGDALEÆ, 129
ANACARDIACEÆ, 71
Anagallis, 299
Anantherix, 348
Andromeda, 285
ANDROMEDEÆ, 279
Andropogon, 592
ANDROPOGONEÆ, 574
Aneimia, 635
Anemone, 4
ANEMONEÆ, 2
Anemonella, 5
Angelica, 180
ANGIOSPERMEÆ, 1
Anise-tree, 12
Anona, 14
ANONACEÆ, 13
Antennaria, 239
Anthenantia, 580
Anthoxanthum, 596
Anychia, 397

Page
Apetalous Exogenous Plants, 391
Aphyllon, 305
Apios, 115
Apium, 178
Aplectrum, 480
Aplopappus, 235
APOCYNACEÆ, 341
Apocynum, 341
Apogen, 270
Apple, 140
Apricot, 141
Apteria, 477
Aquilegia, 8
Arabis, 26
ARACEÆ, 464
Aralia, 183
ARALIACEÆ, 183
Arbor-Vitæ, 459
Arctium, 269
Ardisia, 296
Arenaria, 42
Arethusa, 484
ARETHUSIEÆ, 478
Argemone, 20
Argyranthemum, 431
Arisæma, 464
Aristida, 601
Aristolochia, 392
ARISTOLOCHIACEÆ, 391
Arnica, 265
Arrhenatherum, 605
Arrow Arum, 465
Arrow-grass, 473
Artemisia, 265
Arum Family, 464
Arundinaria, 620
Asarabacca, 391
Asarum, 391
ASCLEPIADACEÆ, 343
ASCLEPIADEÆ, 344
Asclepias, 344
Asclepiodora, 348
Ascyrum, 56
Ash, 352
Asimina, 13
ASPARAGEÆ, 507
Aspen, 454

ASPHODELEÆ, 507
ASPIDIEÆ, 623
Aspidium, 631
ASPLENIEÆ, 623
Asplenium, 628
Asprella, 619
Aster, 217
ASTEROIDEÆ, 217
Astilbe, 145
Astragalus, 106
Atamasco Lily, 493
Atragene, 3
Atriplex, 404
AURANTIACEÆ, 64
AVENEÆ, 575
Avens, 134
Avicennia, 371
AVICENNIEÆ, 367
Ayenia, 53
Azalea, 287
Azolla, 641

Baccharis, 237
Bachelor's-Button, 89
Bald Cypress, 459
Baldwinia, 260
Balm, 380
Balsam Family, 67
BALSAMINACEÆ, 67
Balsam-Tree Family, 60
BAMBUSEÆ, 577
Baneberry, 10
Baptisia, 120
Barbarea, 27
Barberry, 15
Barberry Family, 15
Barley, 619
Bartonia, 339
Basil, 373
Basswood, 54
BATIDACEÆ, 434
Batis, 434
Batis Family, 434
Bayberry, 449
Bean Caper Family, 67
Beard Grass, 599
Bear Grass, 512
Beech, 448
Beech-drops, 305
Beggar-ticks, 259
Bejaria, 288
Bellflower, 278
Bellis, 227
Bellwort, 513
Bellwort Family, 513
Bent Grass, 598, 600
BERBERIDACEÆ, 15
Berberis, 15
Berchemia, 76
Berlandiera, 242
Bermuda Grass, 607
Betula, 451
BETULACEÆ, 451
Bidens, 259
Bigelovia, 234
Bignonia, 303
BIGNONIACEÆ, 303
BIGNONIEÆ, 303
Bignonia Family, 303
Birch, 451
Birch Family, 451
Birthwort, 392
Birthwort Family, 391
Bitternut, 442
Black Jack, 444
Bladdernut, 84
Bladdernut Family, 84
Bladderwort, 301
Bladderwort Family, 301
Blazing Star, 518
BLECHNEÆ, 622
Blechnum, 627
Blephilia, 383
Bletia, 481
Bloodroot, 21
Bloodwort Family, 496
Blueberry, 281
Blue Cohosh, 15
Blue Curls, 389
Blue-eyed Grass, 501
Blue Flag, 499
Blue Jessamine 3
Bluets, 198
Boehmeria, 437
Boerhaavia, 394
Boltonia, 226
Borage Family, 357
BORRAGEÆ, 358
BORRAGINACEÆ, 357
Borreria, 193
Borrichia, 245
Botrychium, 637
Bottle Grass, 619
Bouteloua, 607
Boykinia, 144
Brachyelytrum, 604
Brake, 626
Rramble, 136
Brasenia, 17
Brasiletto Family, 123
Brickellia, 212
Brier, 136
Brome Grass, 610
BROMELIACEÆ, 497
Bromus, 610
Broom Corn, 595
Broom Grass, 592
Broom-rape Family, 305
Broussonetia, 438
Brunella, 384
Brunnichia, 413
BRUNNICHIEÆ, 46
Bryophyllum, 150
Buchnera, 315
Buckeye, 86
Buckleya, 417
Buckthorn, 76
Buckthorn Family, 75
Buckwheat Family, 406
Bugbane, 11
Bullace, 74
Bulrush, 546
Bumelia, 295
Bupleurum, 177
Burdock, 269
Burmannia, 476
BURMANNIACEÆ, 476
Burmannia Family, 476
Bur-reed, 468
Bursera, 71
BURSERACEÆ, 71
Bush Clover, 109
Buttercup, 6
Butternut, 442
Butterwort, 302
Button-Bush, 194
Byrsonima, 88
BYTTNERIACEÆ, 53
Byttneria Family, 53

Cabomba, 17
CABOMBEÆ, 17
Cacalia, 267
CACTACEÆ, 170
Cactus Family, 170
Cæsalpinia, 125
CÆSALPINIEÆ, 123
Cakile, 31
Calamagrostis, 600
Calamintha, 379
Calamus, 466
Calico-bush, 286
Callicarpa, 371
Callirrhoë, 46
CALLITRICHACEÆ, 420
Callitriche, 420
Calophanes, 365
Calopogon, 482
Caltha, 8
CALYCANTHACEÆ, 142
Calycanthus, 142
Calycocarpum, 15
Calyptranthes, 155
Camassia, 510
Camelina, 30
CAMELLIACEÆ, 61
Camellia Family, 61
Campanula, 278
Campanula Family, 278
CAMPANULACEÆ, 278
Camptosorus, 628
Canary Grass, 596
Canavalia, 119
Cane, 620
Canella, 61
CANELLACEÆ, 61
Canella Family, 61
CANNABINACEÆ, 437
CANNACEÆ, 491
Canna, 492
Canna Family, 491
Caper Family, 31
Caper-tree, 32
CAPPARIDACEÆ, 31
Capparis, 32
Capraria, 315
CAPRIFOLIACEÆ, 186
Capsella, 30
Capsicum, 323
Cardamine, 24

Cardinal-flower, 275
Cardiospermum, 86
Carex, 560
Carica, 169
CARICEÆ. 532
Carolina-Allspice Family, 142
Carphephorus, 209
Carpinus, 448
Carrot, 182
Carya, 441
CARYOPHYLLACEÆ, 39
Cashew Family, 71
Cassandra, 284
Cassia, 124
Cassyta, 416
CASSYTEÆ, 414
Castanea, 447
Castilleia, 320
Castor-oil Plant, 432
Casuarina, 454
CASUARINACEÆ, 454
Catalpa, 304
Catchfly, 40
Catesbæa, 198
Catnip, 383
Catopsis, 499
Cat-tail, 468
Cat-tail Family, 467
Caulophyllum, 15
Ceanothus, 77
Cedronella, 384
Celandine, 21
CELASTRACEÆ, 78
Celastrus, 80
Celosia, 399
CELOSIEÆ, 398
Celtis, 440
Cenchrus, 588
Centaurea, 269
Centrosema, 117
Centunculus, 299
Cephalanthus, 194
Ceranthera, 380
Cerastium, 43
Cerasus, 131
Ceratiola, 434
CERATOPHYLLACEÆ, 419
Ceratophyllum, 419
Ceratopteris, 627
Cercis, 123
Cereus, 171
Chærophyllum, 132
Chætospora, 557
Chamæcyparis, 458
Chamælirium, 518
Chapmania, 109
Chaptalia, 270
Charlock, 29
Chawstick, 78
Cheilanthes, 626
Chelidonium, 21
Chelone, 308
CHENOPODIACEÆ, 403
Chenopodium, 404
Cherry, 131
Cherry Laurel, 131
Chickweed, 43
Chiccory, 271
Chimaphila, 289
China Brier, 502
China Tree, 64
Chinquapin, 448
Chiococca, 195
Chiogenes, 283
Chionanthus, 252
CHLORIDEÆ, 575
Chloris, 607
Chrysanthemum, 264
CHRYSOBALANEÆ, 129
Chrysobalanus, 130
Chrysogonum, 240
Chrysophyllum, 294
Chrysopsis, 235
Chrysosplenium, 146
CICHORACEÆ, 270
Cichorium, 271
Cicuta, 177
Cimicifuga, 4
CIMICIFUGEÆ, 2
CINCHONEÆ, 191
Cinna, 599
Cinquefoil, 135
Circæa, 166
Cissus, 74
CISTACEÆ, 35
Citharexylum, 270
Citrus, 64
Cladastris, 123
Cladium, 558
Claytonia, 38
Cleavers, 191
CLEMATIDEÆ, 2
Clematis, 3
Cleome, 32
Clethra, 288
Cliftonia, 84
Climbing Fern, 635
Clintonia, 508
Clitoria, 117
Clover, 97
Club Moss, 638
Club Moss Family, 638
Clusia, 61
CLUSIACEÆ, 60
Cnicus, 268
Cnidosculus, 432
Coccoloba, 413
Cocculus, 14
Cocklebur, 245
Cockspur, 588
Cocoa, 464
Cocoa Plum, 130
Cocos, 463
COFFEÆ, 191
Coffee Tree, 125
Colchicum Family, 513
Collinsonia, 377
Colubrina, 77
Columbine, 8
Columbo, 340
Comandra, 417
COMBRETACEÆ, 152
Combretum Family, 152
Commelyna, 524
COMMELYNACEÆ, 524
COMPOSITÆ, 203
Composite Family, 203
Comptonia, 450
Condalia, 75
CONIFERÆ, 455
Conioselinum, 181
Conobea, 311
Conocarpus, 153
Conopholis, 305
Conradina, 380
Convallaria, 508
CONVOLVULACEÆ, 326
CONVOLVULEÆ, 326
Convolvulus, 329
Convolvulus Family, 326
Coontie, 460
Coprosmanthus, 504
Coptis, 70
Corallorhiza, 479
Coral-root, 479
Corchorus, 55
Cordia, 358
CORDIEÆ, 357
Coreopsis, 256
Coriander, 183
Coriandrum, 183
CORNACEÆ, 184
Corn-Cockle, 41
Cornel, 184
Cornus, 184
Corydalis, 22
Corylus, 448
Cosmos, 259
Cotton-Grass, 548
Cotton-Plant, 53
Cottonwood, 454
Couch Grass, 619
Cowslip, 299
Crab Grass, 581
Cranesbill, 66
Crantzia, 175
Crape Myrtle, 159
CRASSULACEÆ, 149
Cratægus, 138
Crinum, 494
Croomia, 506
Cross-vine, 303
Crotalaria, 96
Croton, 429
Crotonopsis, 431
Crowberry Family, 434
Crowfoot Grass, 608
Cruciferæ, 23
Cryptogamous Plants, 621
Cryptotænia, 179
Ctenium, 608
Cucumber-tree, 12
CUCURBITACEÆ, 169
Cudweed, 239
Cunila, 375
Cuphea, 159
CUPRESSINEÆ, 455

CUPULIFERÆ, 443
Currant, 148
Cuscuta, 331
Cuscuteæ, 326
Custard-Apple, 13, 169
Custard-Apple Family, 13
CYCADACEÆ, 460
Cycas Family, 460
Cyclolobeæ, 403
Cynareæ, 268
Cynodon, 607
Cynoglossum, 362
Cynosciadium, 180
CYPERACEÆ, 531
Cyperus, 532
Cypress, 458
Cypripedieæ, 478
Cypripedium, 490
Cypselea, 172
Cyrilla, 83
Cyrilla Family, 83
CYRILLACEÆ, 83
Cyrtopodium, 482
Cystopteris, 631

Dactylis, 613
Daisy, 227
Dalbergieæ, 95
Dalea, 102
Dandelion, 273
Danthonia, 605
Darbya, 417
Darnel, 618
Dasystoma, 317
Datura, 325
Daucus, 182
Day-flower, 524
Dead Nettle, 387
Decumaria, 147
Deer-Grass, 155
Delphinium, 9
Dendrophylax, 482
Dentaria, 25
Deschampsia, 604
Desmanthus, 128
Desmodium, 111
Diamorpha, 150
Dianthera, 365
DIAPENSIACEÆ, 290
Diapensieæ, 291
Diapensia, 291
Diapensia Family, 290
Diarrhena, 613
Dicentra, 21
Dichondra, 331
Dichondreæ, 326
Dichromena, 557
Dicksonia, 634
Dicksonieæ, 623
Dicliptera, 366
Dicotyledonous Plants, 1
Didiplis, 157
Diervilla, 187
Digitaria, 581
Dioclea, 119
Diodia, 194
Dionæa, 20
Dioscorea, 501
DIOSCOREACEÆ, 501
Diospyros, 293
Dipholis, 295
Diphylleia, 16
Diplachne, 609
DIPSACACEÆ, 203
Dipsacus, 203
Dirca, 416
Discopleura, 178
Ditch-grass, 470
Distichlis, 618
Dittany, 375
Dock, 407
Dodder, 331
Dodecatheon, 299
Dodonæa, 85
Dodoneæ, 85
Dog's Tooth Violet, 511
Dogbane Family, 341
Dogwood, 184
Dogwood Family, 184
Draba, 29
Dropseed Grass, 597, 602
Drosera, 19
DROSERACEÆ, 19
Drypetis, 433
Duckweed, 467
Duckweed Family, 466
Dulichium, 540
Durra Corn, 595
Duranta, 370
Dutchman's Breeches, 21
Dysodia, 263

Eatonia, 613
EBENACEÆ, 293
Ebony Family, 293
Ecastaphyllum, 120
Echinacea, 248
Echinocystus, 170
Echinodorus, 473
Echinospermum, 363
Echites, 342
Echium, 360
Eclipta, 542
Eel-grass, 469
Eglantine, 138
Ehretieæ, 357
Elder, 188
Elecampane, 237
Eleocharis, 541
Elephantopus, 208
Elephant's-foot, 208
Eleusine, 608
Elionurus, 591
Elliottia, 288
Elm, 439
Elm Family, 439
Elodea, 475
Elodes, 60
Elymus, 619
Elytraria, 363
EMPETRACEÆ, 434
Endogenous Plants, 461
Enslenia, 349
Epidendreæ, 478
Epidendrum, 480
Epigæa, 283
Epilobium, 162
Epiphegus, 305
EQUISETACEÆ, 621
Equisetum, 621
Eragrostis, 615
Erechthitis, 266
Erianthus, 595
ERICACEÆ, 279
Ericineæ, 279
Erigenia, 183
Erigeron, 225
Eriocaulon, 529
ERIOCAULONACEÆ, 529
Eriochloa, 580
Eriogoneæ, 407
Eriogonum, 413
Eriophorum, 548
Erithalis, 196
Ernodia, 197
Eryngium, 175
Erysimum, 28
Erythrina, 116
Erythronium, 511
Escallonieæ, 143
Eugenia, 154
Eulophus, 183
Euonymus, 80
Eupatoreæ, 209
Eupatorium, 213
Euphorbia, 422
EUPHORBIACEÆ, 421
Eusmilaceæ, 502
Eustoma, 338
Euxolous, 400
Evening-Primrose, 161
Evening-Primrose Family, 160
Everlasting, 239
Evolvulus, 330
Excœcaria, 428
Exogenous Plants, 1
Exostemma, 198

Fagus, 448
False Acacia, 103
False Foxglove, 317
False Hellebore, 516
False Mitre-wort, 146
False Nettle, 437
Feather Grass, 600
Ferns, 622
Fescue Grass, 611
Festuca, 611
Festuceæ, 576
Feverwort, 188
FICOIDEÆ, 172
Ficus, 438
Fig, 438
Figwort, 307
Figwort Family, 306
Filago, 239
FILICES, 622
Fimbristylis, 549
Fir, 457

Fireweed, 266
Flaveria, 261
Flax, 64
Flax Family, 64
Fleabane, 225
Flœrkia, 66
Flower de Luce, 499
Flowering Fern, 636
Flowering Plants, 1
Flowerless Plants, 621
Fly Poison, 517
Fly-trap, 20
Forestiera, 353
FORESTIEREÆ, 352
Forget-me-not, 362
Fothergilla, 156
Four-o'clock Family, 393
Foxtail Grass, 597
Fragaria, 136
Franklinia, 62
Frasera, 240
FRAXINEÆ, 352
Fraxinus, 352
French Mulberry, 371
Fringe Tree, 352
Frœlichia, 403
Frog's-bit Family, 475
Fugosia, 53
Fuirena, 541
Fumaria, 22
FUMARIACEÆ, 21
Fumitory, 22
Fumitory Family, 21

Gaillardia, 262
GALACINEÆ, 291
Galactia, 117
Galax, 291
Galium, 191
Gama Grass, 591
Garberia, 212
Gatesia, 365
Gaultheria, 283
Gaura, 160
Gaylussacia, 280
Gelsemium, 201
Genipa, 197
Gentian, 338
Gentiana, 338
GENTIANACEÆ, 335
Gentian Family, 335
Georgia Bark, 198
GERANIACEÆ, 66
Geranium, 66
Geranium Family, 66
Gerardia, 318
Germander, 390
Geum, 134
Gilia, 335
Gillenia, 133
Ginseng, 184
Ginseng Family, 183
Glasswort, 405
Gleditschia, 125
Glyceria, 612
Gnaphalium, 239
Goat's Rue, 104
Golden Club, 466
Golden-rod, 227
Golden Saxifrage, 146
Golden Seal, 10
Gold-Thread, 10
GOMPHRENEÆ, 399
Gonolobus, 350
GOODENIACEÆ, 227
Goodenia Family, 227
Goodyera, 489
Gooseberry, 148
Goosefoot, 404
Goosefoot Family, 403
Gordonia, 62
Gossypium, 53
Gouania, 78
Gourd Family, 169
GRAMINEÆ, 573
Grape, 73
Grass Family, 573
Grass of Parnassus, 149
Gratiola, 311
Grindelia, 236
Gromwell, 361
Ground Cherry, 323
Ground Laurel, 283
Ground Nut, 115
Groundsel, 266
Guaiacum, 68
Guettarda, 196
Guinea Corn, 595
Gyminda, 79
Gymnadenia, 485
Gymnocladus, 125
Gymnolomia, 251
Gymnopogon, 606
GYMNOSPERMÆ, 455
Gynandropsis, 32

Habenaria, 487
HÆMODORACEÆ, 496
Halesia, 292
Halophila, 476
HALORAGEÆ, 159
HAMAMELACEÆ, 151
Hamamelis, 151
Hamelia, 197
Hartwrightia, 209
Hart's Tongue, 630
Haw, 188
Hawthorn, 138
Hazel-nut, 448
Heart's-ease, 33
Heath Family, 279
Hedeoma, 378
Hedge Hyssop, 311
Hedge Mustard, 27
Hedge Nettle, 388
HEDYSAREÆ, 94
Helenium, 262
Helianthella, 254
Helianthemum, 35
Helianthus, 257
Heliopsis, 247
HELIOTROPEÆ, 357
Heliotropium, 359
Hellebore, 10
HELLEBORINEÆ, 2
Helleborus, 10
Hemicarpha, 540
Hemp Family, 437
Hepatica, 4
Heracleum, 181
Herd's-grass, 597
Herpestis, 310
Hesperis, 28
Heteranthera, 523
Heteropogon, 594
Heterotheca, 235
Heuchera, 143
Hexalectris, 481
HIBISCEÆ, 45
Hibiscus, 51
Hickory, 441
Hieracium, 271
Hierochloë, 596
HIPPOCASTANEÆ, 85
Hippocratea, 81
HIPPOCRATEÆ, 79
Hippomane, 426
Holcus, 605
Holly, 81
Holly Family, 81
Holy Grass, 596
Honey-Locust, 125
Honeysuckle, 187, 287
Honeysuckle Family, 186
Hop, 437
Hop Hornbeam, 449
Hop-tree, 69
HORDEÆ, 576
Hordeum, 619
Horehound, 388
Hornbeam, 448
Hornwort, 419
Hornwort Family, 419
Horse Balm, 377
Horsechestnut, 86
Horse Mint, 375, 382
Horsetail Family, 621
Hosackia, 99
Hottonia, 297
Hound's-tongue, 362
Houstonia, 198
Huckleberry, 280, 281
Hudsonia, 37
Humulus, 437
Huntsman's Cup, 18
Hydrangea, 146
HYDRANGEÆ, 143
Hydranthelium, 315
Hydrastis, 10
HYDROCHARIDACEÆ, 475
Hydrochloa, 589
Hydrocotyle, 174
Hydrolea, 356
HYDROLEÆ, 354
HYDROPHYLLACEÆ, 354
Hydrophyllum, 354
Hygrophila, 364
Hymenocallis, 493
Hymenopappus, 261

HYMENOPHYLLEÆ, 623
Hypelate, 85
HYPERICACEÆ, 55
Hypericum, 56
Hypopitys, 290
Hypoxis, 495
Hyptis, 373

Ilex, 81
ILICINEÆ, 81
ILLECEBRACEÆ, 396
Illicium, 12
Ilysanthes, 312
Impatiens, 67
Imperata, 595
Indian Hemp, 341
Indian Mallow, 48
Indian Physic, 133
Indian-Pipe, 290
Indian-Pipe Family, 290
Indigo, 105
Indigofera, 105
Inula, 237
Iodanthus, 27
Ipecac, 194
IPOMŒA, 326
Irenastrum, 402
Iresine, 401
IRIDACEÆ, 499
Iris, 499
Iris Family, 499
Ironweed, 207
Isanthus, 389
ISOETACEÆ, 640
Isoetes, 640
Isolepis, 550
Isopyrum, 8
Itea, 146
Iva, 243

Jacquemontia, 329
Jacquinia, 297
Jamaica Dogwood, 120
Jamestown Weed, 325
Jatropha, 432
Jeffersonia, 16
Jersey Tea, 77
Jewel-Weed, 67
JUGLANDACEÆ, 441
Juglans, 442
JUNCACEÆ, 519
Juncus, 520
Juniper, 458
Juniperus, 458
Jussiæa, 163

Kallströmia, 68
Kalmia, 286
Kidney-Bean, 115
Knotweed, 409
Knotwort Family, 396
Kosteletzkya, 50
Krameria, 93
KRAMERIACEÆ, 92
Krigia, 270
Kuhnia, 212
Kyllingia, 539

LABIATÆ, 371
LABIATIFLORÆ, 206, 270
Lachnanthes, 496
Lachnocaulon, 530
Lactuca, 273
Lady's Slipper, 490
Lagerstrœmia, 159
Laguncularia, 153
Lamb Lettuce, 202
Lamium, 387
Lantana, 370
Laportea, 436
Larkspur, 9
Lathyrus, 108
LAURACEÆ, 414
Laurel, 286
Laurel Family, 414
Laurocerasus, 131
Leadwort, 300
Leadwort Family, 300
Leather-Flower, 3
Leatherwood, 416
Leavenworthia, 26
Lechea, 36
Leersia, 589
LEGUMINOSÆ, 93
Leiophyllum, 288
Leitneria, 450
LEITNERIACEÆ, 450
Leitneria Family, 450
Lemna, 467
LEMNACEÆ, 466
Lemon, 64
LENTIBULACEÆ, 301
Leonotis, 388
Leonurus, 388
Lepachys, 250
Lepidium, 30
Leptocaulis, 178
Leptochloa, 608
Leptopoda, 263
Lepuropetalon, 143
Lespedeza, 109
Lesquerella, 29
Lettuce, 273
Leucothoë, 284
Liatris, 210
LIGULIFLORÆ, 206
Ligusticum, 180
LILIACEÆ, 507
Lilium, 511
Lily, 511
Lily Family, 507
Lily of the Valley, 508
Lime, 64
LIMNANTHACEÆ, 66
Limnanthemum, 340
Limnobium, 476
LINACEÆ, 64
Linaria, 309
Linden, 54
Linden Family, 54
Lindera, 415
Lindheimeria, 243
Linum, 64
Liparis, 479
Lipocarpha, 540

LIPOCARPHEÆ, 531
Lippia, 369
Liquidambar, 152
Liriodendron, 13
Listera, 490
Lithospermum, 361
Litsea, 415
Liver-Leaf, 4
Lizard's-Tail, 418
LOASACEÆ, 166
Loasa Family, 166
Lobelia, 275
LOBELIACEÆ, 275
Lobelia Family, 275
Loblolly Bay, 62
Locust, 102
LOGANIACEÆ, 200
Logania Family, 200
Lolium, 618
LOMENTACEÆ, 23
Long Moss, 497
Lonicera, 187
Loosestrife, 158, 290
Loosestrife Family, 157
Lophanthus, 383
Lophiola, 496
Lopseed, 371
LORANTHACEÆ, 418
Loteæ, 93
Ludwigia, 164
Lungwort, 361
Lupine, 97
Lupinus, 97
Luziola, 589
Luzula, 519
Lycium, 325
LYCOPODIACEÆ, 638
Lycopodium, 638
Lycopus, 374
Lygodesmia, 273
Lygodium, 635
Lyme Grass, 619
Lysimachia, 298
LYTHRACEÆ, 157
Lythrum, 158

Macbridea, 385
Macranthera, 316
Madder Family, 190
Magnolia, 12
MAGNOLIACEÆ, 11
Magnolia Family, 11
MAGNOLIEÆ, 11
Mahogany, 63
Mahogany Family, 63
Maidenhair, 627
Malachodendron, 62
Malachra, 50
MALAXIDEÆ, 478
Mallow, 45
Mallow Family, 45
MALPIGHIACEÆ, 88
Malpighia Family, 88
Malva, 45
MALVACEÆ, 45
Malvastrum, 46
MALVEÆ, 45

Mandrake, 16
Mangrove, 152
Mangrove Family, 152
Manisuris, 591
Maple, 87
Marrubium, 388
Marshallia, 260
Marsh Grass, 605
Marsh Marigold, 8
Marsh Pennywort, 174
Marsh Rosemary, 300
Marsilia, 640
MARSILIACEÆ, 640
Martynia, 304
Mayaca, 526
MAYACACEÆ, 526
Mayaca Family, 526
May-Apple, 16
Maydeæ, 574
Maypop, 168
Maytenus, 80
Mayweed, 264
Meadow Grass, 614
Meadow Rue, 5
Meadow-Sweet, 132
Medeola, 506
Medicago, 97
Melampyrum, 320
MELANTHACEÆ, 513
Melanthera, 246
Melanthium, 515
MELASTOMACEÆ, 155
Melastoma Family, 155
Melia, 63
MELIACEÆ, 63
Melica, 611
Melic Grass, 611
Melilot, 98
Melilotus, 98
Melissa, 380
Melochia, 54
Melothria, 170
MENISPERMACEÆ, 14
Menispermum, 15
Mentha, 374
Mentzelia, 167
Menziesia, 286
Mercurialis, 429
Mertensia, 361
Metastelma, 350
Mexican Poppy, 20
Mezereum Family, 416
Micranthemum, 313
Micromeria, 378
Microstylis, 479
Mikania, 216
Milk Vetch, 106
Milkweed, 344
Milkweed Family, 343
Milkwort, 89
Milkwort Family, 88
Mimosa, 126
Mimosa Family, 126
Mimoseæ, 126
Mimulus, 309
Mimusops, 296
Mint, 374
Mint Family, 371
Mistletoe, 418
Mistletoe Family, 418
Mitchella, 195
Mitella, 146
Mitreola, 201
Mitrewort, 146, 201
Mock Orange, 131
Modiola, 49
Mogiphanes, 402
Mollugineæ, 172
Mollugo, 173
Monanthochloa, 618
Monarda, 382
Monardeæ, 372
Monkey-flower, 309
Monkshood, 9
Monocotyledonous Plants, 461
Monopetalous Exogenous Plants, 186
Monotropa, 290
Monotropeæ, 280
Moonseed, 15
Moonseed Family, 14
Moonwort, 637
MORACEÆ, 437
Morinda, 195
Morning Glory, 326
Morus, 438
Motherwort, 388
Mouse-ear, 43
Mouse-tail, 6
Muhlenbergia, 602
Mulberry, 438
Mulberry Family, 437
Mullein, 307
Muscadine, 74
Mustard, 28
Mustard Family, 23
Mutisiaceæ, 270
Myginda, 79
Myosotis, 362
Myosurus, 6
Myrica, 449
MYRICACEÆ, 449
Myriophyllum, 159
Myrsinaceæ, 296
MYRSINE, 296
Myrsineæ, 296
Myrsine Family, 296
MYRTACEÆ, 154
Myrtle Family, 154

NAIADACEÆ, 468
Naias, 469
Nama, 357
Nasturtium, 24
Nectandra, 414
Negundo, 88
Nelumbium, 17
Nelumboneæ, 17
Nemastylis, 501
Nemophila, 355
Neottieæ, 478
Nephrolepis, 633
Nesæa, 158
Nettle, 435
Nettle Family, 434
Nettle Tree, 440
Neviusia, 133
Nicandra, 325
Nightshade, 321
Nightshade Family, 321
Nine-bark, 132
Nolina, 510
Nondo, 180
Nuphar, 18
Nut Rush, 558
NYCTAGINACEÆ, 393
Nymphæa, 17
NYMPHÆACEÆ, 17
Nyssa, 185

Oak, 443
Oak Family, 443
Oat Grass, 605
Obione, 405
Obolaria, 340
Ocimoideæ, 372
Ocimum, 373
Œnothera, 161
Ogeechee Lime, 186
Oil-Nut, 417
OLACACEÆ, 62
Oldenlandia, 200
OLEACEÆ, 351
Oleineæ, 352
Olive Family, 352
ONAGRACEÆ, 160
Onion, 509
Onoclea, 634
Onosmodium, 360
OPHIOGLOSSACEÆ, 636
Ophioglossum, 637
Ophrydeæ, 478
Oplismenus, 580
Opoponax, 128
Opuntia, 171
Orache, 404
Orange, 64
Orange Family, 64
Orchard Grass, 613
ORCHIDACEÆ, 477
Orchis, 484
Orchis Family, 477
Oreodoxa, 463
OROBANCHACEÆ, 305
Orontium, 466
Orpine, 149
Orpine Family, 149
Oryzeæ, 574
Osmanthus, 352
Osmorhiza, 183
Osmunda, 636
Osmundineæ, 624
Ostrya, 449
Otophylla, 317
OXALIDACEÆ, 65
Oxalis, 65
Ox-eye Daisy, 264
Oxybaphus, 393
Oxydendrum, 286

Pachysandra, 433
Pachystima, 81
Pæpalanthus, 530
Palafoxia, 261
Palmæ, 461
Palmetto, 462
Palms, 461
Panax, 184
PANICEÆ, 573
Panic Grass, 581
Panicum, 581
PAPAVERACEÆ, 20
Papaw, 13
PAPAYÆ, 168
Paper Mulberry, 438
PAPILIONACEÆ, 93
Pappoose-Root, 16
Parietaria, 436
Parkinsonia, 126
Parnassia, 149
PARNASSIACEÆ, 148
Parnassia Family, 148
Paronychia, 396
Parsley Family, 173
Parthenium, 243
Partridge-berry, 195
Paspalum, 577
Passiflora, 168
PASSIFLORACEÆ, 168
Passion-Flower, 168
Passion-Flower Family, 168
Pavonia, 49
Peach, 141
Pear, 141
Pecan-nut, 442
Pectis, 263
Pedicularis, 320
Pellæa, 626
Pellitory, 436
Peltandra, 465
Pennisetum, 588
Penthorum, 151
Pentodon, 200
Pentstemon, 308
Peperomia, 419
Pepper Family, 418
Peppergrass, 30
Pepper-root, 25
Perilla, 390
Periwinkle, 343
Persea, 414
Persimmon, 293
Petalostemon, 100
Petiveria, 395
PETIVERIEÆ, 395
Petunia, 326
Phacelia, 355
Phænogamous Plants, 1
Phalaris, 596
PHASEOLEÆ, 94
Pharus, 590
Phaseolus, 115
Pheasant's Eye, 8
Phegopteris, 633
Philadelphus, 147
Philibertia, 350
Philoxerus, 401
Phlox, 333
Phorodendron, 418
Phragmites, 618
Phryma, 371
PHRYMEÆ, 367
Phyllanthus, 432
Physalis, 323
Physocarpus, 132
Physostegia, 387
Physurus, 490
Phytolacca, 396
PHYTOLACCACEÆ, 395
PHYTOLACCEÆ, 395
Picea, 458
Pickerel-weed, 523
Pickerel-weed Family, 523
Picramnia, 70
Pigeon Grass, 587
Pignut, 441
Pigweed, 404
Pilea, 436
Pimpernel, 299
Pimpernella, 177
Pinckneya, 198
Pine, 455
Pine Family, 455
Pine-Apple Family, 497
Pinguicula, 302
Pink Family, 39
Pinkroot, 200
Pinus, 455
Pinweed, 36
PIPERACEÆ, 418
Pipewort, 529
Pipewort Family, 529
Piriqueta 167
Piscidia, 120
Pisonia, 394
Pistia, 465
Pitcher-Plant Family, 18
Pithecolobium, 127
Planera, 440
Planer Tree, 440
Plane Tree, 441
Plane-Tree Family, 441
PLANTAGINACEÆ, 390
Plantago, 390
Plantain, 390
Plantain Family, 390
PLATANACEÆ, 441
Platanthera, 485
Platanus, 441
Pleea, 518
Pluchea, 238
Plum, 130, 140
PLUMBAGINACEÆ, 300
Plumbago, 300
Poa, 614
POACEÆ, 574
Podophyllum, 16
PODOSTEMACEÆ, 420
Podostemon, 420
Podostigma, 348
Pogonia, 483
Poison Elder, 72
Poison Ivy, 72
Poison Oak, 72
Pokeweed, 396
Pokeweed Family, 395
Polanisia, 31
POLEMONIACEÆ, 333
Polemonium, 335
Polemonium Family, 333
Polycarpon, 44
Polygala, 89
POLYGALACEÆ, 88
POLYGONACEÆ, 406
Polygonatum, 507
POLYGONEÆ, 406
Polygonella, 408
Polygonum, 409
Polymnia, 240
Polypetalous Exogenous Plants, 1
POLYPODIEÆ, 622
Polypodium, 624
Polypody, 624
Polypogon, 599
Polypremum, 201
Polypteris, 261
Polystachya, 482
Polytænia, 182
POMEÆ, 130
Pomegranate, 142
Pondweed, 470
Pondweed Family, 468
Pontederia, 523
PONTEDERIACEÆ, 523
Ponthieva, 490
Poplar, 454
Poppy Family, 20
Populus, 454
Portulaca, 39
PORTULACACEÆ, 38
Potamogeton, 470
Potentilla, 135
Poterium, 134
Prenanthes, 272
Prickly Ash, 68
Prickly Pear, 171
Pride of India, 63
Primrose Family, 297
PRIMULACEÆ, 297
Prince's Pine, 289
Priva, 367
Prosartes, 514
Proserpinaca, 159
Prunus, 130
Pseudophœnix, 463
Psilocarya, 557
Psilotum, 639
Psoralea, 99
Psychotria, 195
Ptelea, 69
PTERIDEÆ, 622
Pteris, 625
Pterocaulon, 238
Puccoon, 21
Pulse Family, 93, 96
Purslane, 39
Purslane Family, 38
Puttyroot, 480
Pycnanthemum, 375
Pyrola, 289

Pyrola Family, 288
Pyrolineæ, 280, 288
Pyrrhopappus, 273
Pyrularia, 417
Pyrus, 140
Pyxidanthera, 291

Quassia, 70
Quassia Family, 70
Queen's Delight, 427
Quercus, 443
Quince, 141

Randia, 197
RANUNCULACEÆ, 3
Ranunculeæ, 2
Ranunculus, 2
Raphidophyllum, 463
Rattlebox, 96
Rattlesnake Plantain, 489
Red Bay, 414
Redbud, 123
Red Cohosh, 11
Red Pepper, 323
Reed, 618, 620
Reimaria, 577
Reynosia, 76
RHAMNACEÆ, 75
Rhamnus, 76
Rhatany Family, 92
Rhexia, 155
Rhizophora, 152
RHIZOPHORACEÆ, 152
Rhododendron, 287
Rhodora, 280
Rhus, 71
Rhynchosia, 114
Rhynchospora, 551
Rhynchosporeæ, 532
Ribes, 148
Ribesceæ, 143
Richardia, 194
Ricinus, 432
Riverweed, 420
Riverweed Family, 420
Rivina, 395
Robinia, 102
Rocket, 28
Rock-rose, 35
Rock-rose Family, 35
Rosa, 137
Rosaceæ, 129
Rose, 137, 138
Rose Bay, 287
Rose Family, 129
Rose Mallow, 51
Rottboellia, 590
Rottboellieæ, 574
Roxburghia, 506
ROXBURGHIACEÆ, 506
Royal Palm, 463
RUBIACEÆ, 190
Rubus, 136
Rudbeckia, 248
Ruellia, 364
Rue-Anemone, 5
Rue Family, 68
Rumex, 407
Ruppia, 470
Rush, 520
Rush Family, 519
RUTACEÆ, 68

Sabal, 461
Sabbatia, 336
Sage, 380
Sageretia, 76
Sagina, 41
Sagittaria, 473
St. John's-wort, 56
St. John's-wort Family, 55
St. Peter's-wort, 56
SALICACEÆ, 452
Salicornia, 405
Salix, 452
Salsola, 406
Saltwort, 406
Salvia, 380
SALVINIACEÆ, 641
Sambucus, 188
Samolus, 299
Sandalwood Family, 416
Sandspur, 588
Sandwort, 42
Sanguinaria, 21
Sanicula, 175
SANTALACEÆ, 416
SAPINDACEÆ, 84
Sapindeæ, 85
Sapindus, 86
Sapodilla Family, 294
Saponaria, 41
SAPOTACEÆ, 294
Sarracenia, 18
SARRACENIACEÆ, 18
Sarsaparilla, 183
Sassafras, 415
Satureia, 378
Satureiæ, 372
Saururus, 418
Savory, 378
Saxifraga, 145
SAXIFRAGACEÆ, 142
Saxifrage, 145
Saxifrage Family, 142
Scævola, 277
Schæfferia, 79
Schizandra, 12
Schizandreæ, 11
Schizæineæ, 623
Schœnocaulon, 517
Schœnolirion, 510
Schœpfia, 63
Schrankia, 126
Schwalbea, 320
Schweinitzia, 290
Scirpeæ, 531
Scirpus, 546
Scleria, 558
Sclerieæ, 532
Sclerolepis, 209
Scleropus, 400
Scolopendrium, 630
Scoparia, 315
Scouring Rush, 621
Scrophularia, 307
SCROPHULARIACEÆ, 306
Scurvy Grass, 27
Scutellaria, 384
Sea Grape, 413
Sea Mustard, 31
Sea Purslane, 172
Sebastiania, 427
Sedge, 560
Sedge Family, 531
Sedum, 149
Seed-box, 164
Selaginella, 640
SELAGINELLACEÆ, 639
Self-heal, 384
Senebiera, 30
Senecio, 266
Senecionideæ, 239
Senna, 124
Sensitive Brier, 126
Sensitive Plant, 126
Serenoa, 462
Sericocarpus, 217
Sesameæ, 303
Sesbania, 105
Sesuvium, 172
Setaria, 587
Seutera, 349
Seymeria, 316
Shepherd's Purse, 30
Shield Fern, 631
Shortia, 291
Sicyos, 70
Sida, 47
Sideroxylon, 294
Side-Saddle Flower, 18
Silene, 40
Sileneæ, 39
Siliculosæ, 23
Siliquosæ, 23
Silkweed, 344
Silphium, 240
Silver Palm, 462
Simaruba, 70
SIMARUBACEÆ, 70
Sinapis, 28
Siphonychia, 398
Sisymbrium, 27
Sisyrhinchium, 501
Sium, 179
Skullcap, 384
Skunk Cabbage, 465
Sloe, 188
SMILACACEÆ, 502
Smilacina, 508
Smilax, 502
Smilax Family, 502
Snakehead, 308
Snakeroot, 11, 91, 175, 210
Snowberry, 187, 195, 283
Snowdrop Tree, 292
Soap berry, 86
Soap-berry Family, 84
Soapwort, 41

SOLANACEÆ, 321
Solanum, 321
Solea, 35
Solidago, 227
Soliva, 265
Solomon's Seal, 507, 508
Sonchus, 274
Sophora, 123
SOPHOREÆ, 95
Sorghum, 595
Sorrel-tree, 286
Sour Gum, 185
Sour-wood, 286
Spanish Bayonet, 512
Sparganium, 468
Spartina, 605
Specularia, 279
Speedwell, 314
Spergula, 44
Spergularia, 44
SPERGULEÆ, 39
Spermacoce, 193
Spice-Bush, 415
Spider Lily, 493
Spiderwort, 525
Spiderwort Family, 524
Spigelia, 200
Spike Rush, 541
Spilanthes, 247
Spindle-tree, 80
Spiræa, 132
Spiranthes, 488
SPIROLOBEÆ, 403
Spleenwort, 628
Sporobolus, 597
Spring Beauty, 38
Spruce, 457, 458
Spurge, 422
Spurge Family, 421
Spurrey, 44
Squaw-root, 305
Squirrel-Corn, 22
STACHYDEÆ, 373
Stachys, 388
Stachytarpha, 369
Staff-tree, 80
Staphylea, 84
STAPHYLEACEÆ, 84
Star-Grass, 495, 497
Star Thistle, 269
Starwort, 43, 217
Statice, 300
Steironema, 298
Stellaria, 43
Stenandrium, 365
Stenanthium, 516
Stenotaphrum, 589
Stickweed, 363
Stillingia, 427
Stipa, 600
Stipulicida, 44
Stokesia, 208
Stonecrop, 149
Storax, 292
Storax Family, 291
Strawberry, 136
Streptopus, 514
Strumpfia, 196
Stuartia, 62
Stylisma, 330
Stylophorum, 20
Stylosanthes, 109
STYRACACEÆ, 291
STYRACEÆ, 292
Styrax, 292
Suæda, 405
Sumach, 71
Sundew, 19
Sundew Family, 19
Sunflower, 251
Supple Jack, 76
Suriana, 70
Sweet Bay, 12
Sweet Clover, 98
Sweet Fern, 450
Sweet Flag, 466
Sweet Gum, 152
Sweet Potato, 327
Sweet-scented Grass, 596
Sweet-scented Shrub, 142
Swietenia, 63
Sycamore, 441
Symphoricarpus, 187
Symplocarpus, 465
SYMPLOCINEÆ, 292
Symplocos, 293
Synandra, 387
Syringa, 147

Tænitis, 625
Talinum, 38
Tanacetum, 264
Tansy, 264
Tape-grass, 475
Taraxacum, 273
Tare, 107
Tar-Flower, 288
TAXINEÆ, 455
Taxodium, 459
Taxus, 459
Teasel, 203
Teasel Family, 203
Tecoma, 304
Telanthera, 402
Tephrosia, 103
Terminalia, 153
Tetragonotheca, 247
Tetranthera, 492
Teucrium, 390
Thalassia, 470
Thalia, 491
Thalictrum, 5
Thaspium, 179
THEOPHRASTACEÆ, 296
Thermopsis, 122
Thespesia, 52
Thistle, 268
Thorn Apple, 325
Thoroughwort, 213
Thrinax, 462
Thuya, 459
Thurberia, 600
THYMELEACEÆ, 416
Thymus, 390
Thysanella, 412
Tiarella, 146
Tickseed, 256
Tiedmannia, 181
Tilia, 54
TILIACEÆ, 54
Tillæa, 150
Tillandsia, 497
Tipularia, 481
Titi, 84
Toad-Flax, 309
Tofieldia, 518
Torchwood, 69
Torchwood Family, 71
Torreya, 460
Toothache Tree, 68
Toothwort, 25
Touch-me-not, 67
Tournefortia, 359
Tradescantia, 525
Tragia, 429
Trautvetteria, 6
Trema, 440
Tree Orchis, 480
Trepocarpus, 182
Trianosperma, 169
Trianthema, 172
Tribulus, 67
Trichelostylis, 549
Trichomanes, 635
Trichostema, 389
Trifolium, 98
Triglochin, 472
Trilisia, 212
TRILLIACEÆ, 502
Trillium, 504
Trillium Family, 502
Triodia, 609
Triosteum, 188
Triplasis, 610
Tripsacum, 591
Trisetum, 604
Triumfetta, 55
Trumpet-flower, 304
Trumpet-leaf, 18, 19
Tsuga, 457
TUBULIFLOREÆ, 203, 207
TULIPACEÆ, 507
Tulip-tree, 13
TURNERACEÆ, 167
Turnera Family, 167
Twayblade, 479
Twin-leaf, 16
Twisted Orchis, 488
Typha, 468
TYPHACEÆ, 467

ULMACEÆ, 439
Ulmus, 439
UMBELLIFERÆ, 173
Unicorn Plant, 304
Uniola, 617
Urena, 50
URENEÆ, 45
Urtica, 435

URTICACEÆ, 434
Utricularia, 301
Uvularia, 513
UVULARIEÆ, 513

VACCINIEÆ, 279
Vaccinium, 281
Valerian, 202
Valeriana, 202
VALERIANACEÆ, 202
Valerian Family, 202
Valerianella, 202
Vallesia, 343
Vallisneria, 475
VANDEÆ, 478
Vanilla, 484
Veratrum, 516
Verbascum, 307
Verbena, 368
VERBENACEÆ, 367
Verbesina, 254
Vernonia, 207
VERNONIACEÆ, 207
Veronica, 314
Vervain, 268
Vervain Family, 267
Vetch, 107
Viburnum, 188
Vicia, 107
VICIEÆ, 94
Vigna, 116
Vinca, 343
Vine, 73
Vine Family, 73
Viola, 33
VIOLACEÆ, 32
Violet, 33
Violet Family, 32
Virginian Creeper, 75
Virgin's Bower, 3
VITACEÆ, 73
VITEÆ, 367
Vitis, 73
Vittaria, 625
VITTARIEÆ, 622
Voyra, 340
Wake-Robin, 464
Waldsteinia, 135
Walking-Leaf, 628
Walnut, 442
Walnut Family, 441
Waltheria, 53
Wampee, 523
Warea, 28
Watches, 19
Water-Chinquapin, 17
Water-Cress, 24
Water Hemlock, 177
Waterleaf, 354
Waterleaf Family, 354
Water-Lily, 17
Water-Lily Family, 16
Water-Milfoil, 159
Water-Milfoil Family, 159
Water-Plaintain, 472
Water-Plantain Family, 472
Water-Shield, 17
Water-Starwort, 420
Water-Starwort Family, 420
Wax-Myrtle, 449
Wax-Myrtle Family, 449
Wedelia, 246
Whahoo, 440
White Cohosh, 10
White Poplar, 13
Whortleberry Family, 280
Wicky, 286
Wild Hyacinth, 510
Wild Rice, 590
Willow, 452
Willow Family, 452
Willow-Herb, 162
Wind-Flower, 4
WINTEREÆ, 11
Wintergreen, 283
Wire Grass, 597, 601
Wistaria, 103
Witch-Hazel, 151
Witch-Hazel Family, 151
Wolffia, 467
Wolfsbane, 9
Wood Anemone, 4
Woodbine, 187
Wood Rush, 519
Woodsia, 634
WOODSIEÆ, 623
Wood-Sorrel, 65
Wood-Sorrel Family, 65
Woodwardia, 628
Wormseed, 404
Wormwood, 265

Xanthium, 245
Xerophyllum, 517
Ximenia, 63
Ximenia Family, 62
XYRIDACEÆ, 526
Xyris, 526

Yam, 501
Yam Family, 501
Yarrow, 264
Yaupon, 82
Yellow-eyed Grass, 526
Yellow-eyed Grass Family, 526
Yellow Jessamine, 201
Yellow Poppy, 20
Yellow Root, 10
Yellow Water-Lily, 18
Yellow-Wood, 123
Yew, 459
Yucca, 512

Zamia, 460
Zannichella, 469
Zanthorhiza, 10
Zanthoxylum, 68
Zephyranthes, 493
Zinnia, 446
Zizania, 590
Zizia, 179
Zornia, 108
Zostera, 469
Zygadenus, 515
ZYGOPHYLLACEÆ, 67

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